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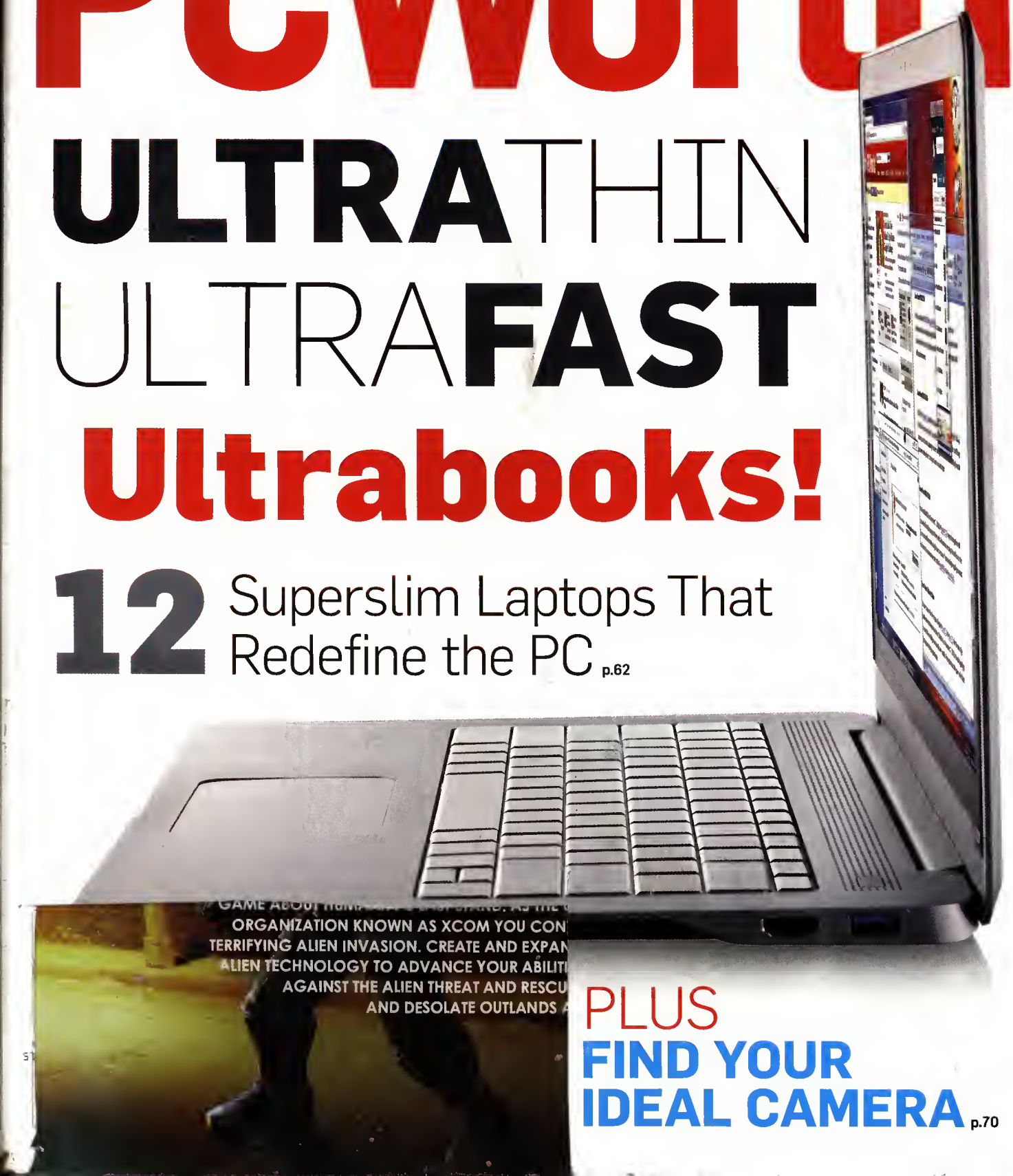
ULTRATHIN ULTRAFAST Ultrabooks!

12 Superslim Laptops That Redefine the PC p.62



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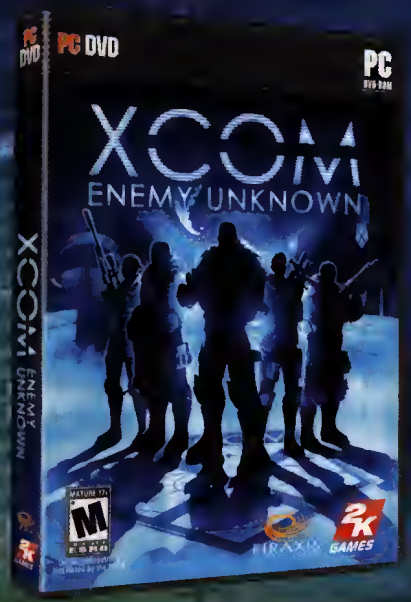

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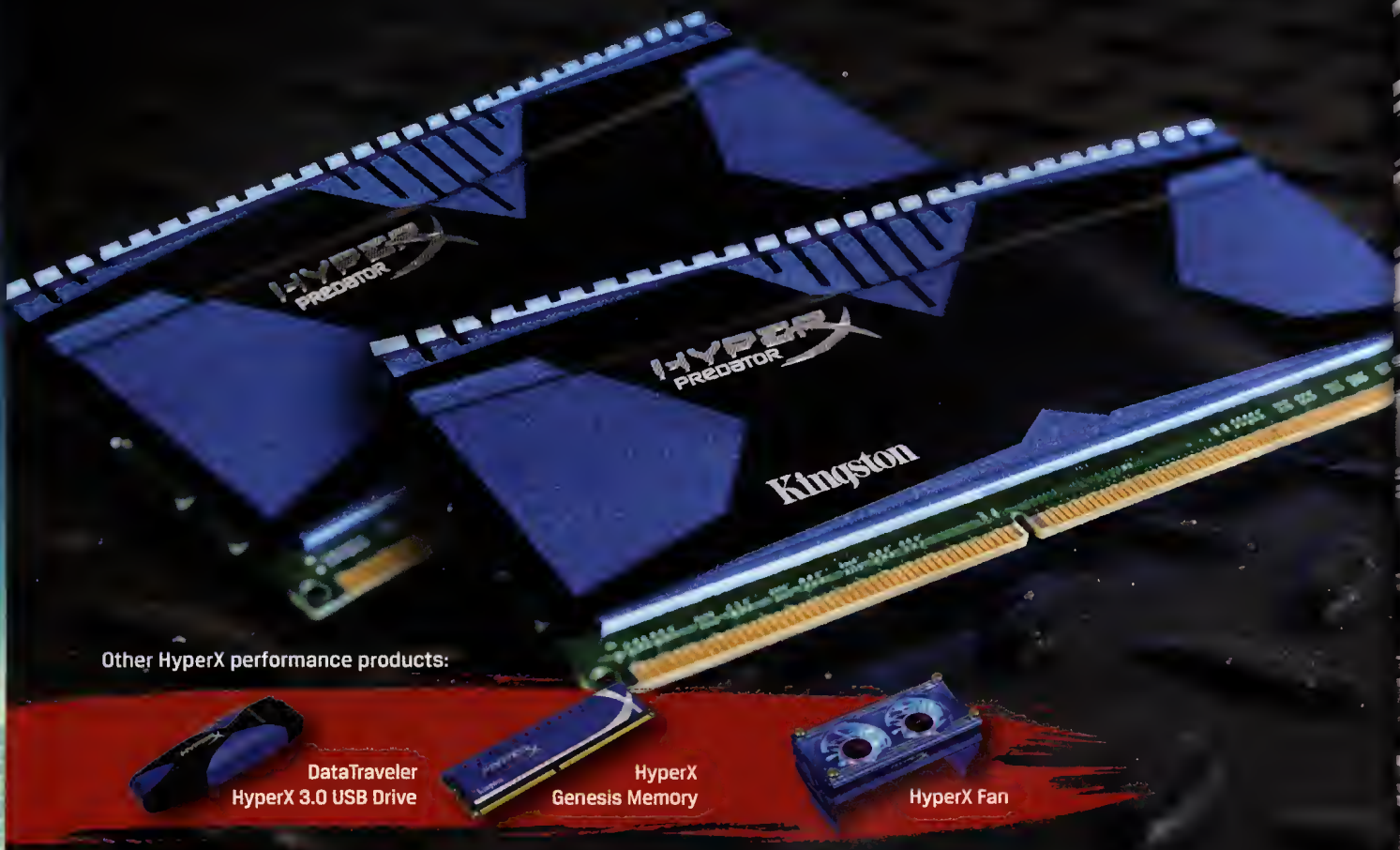

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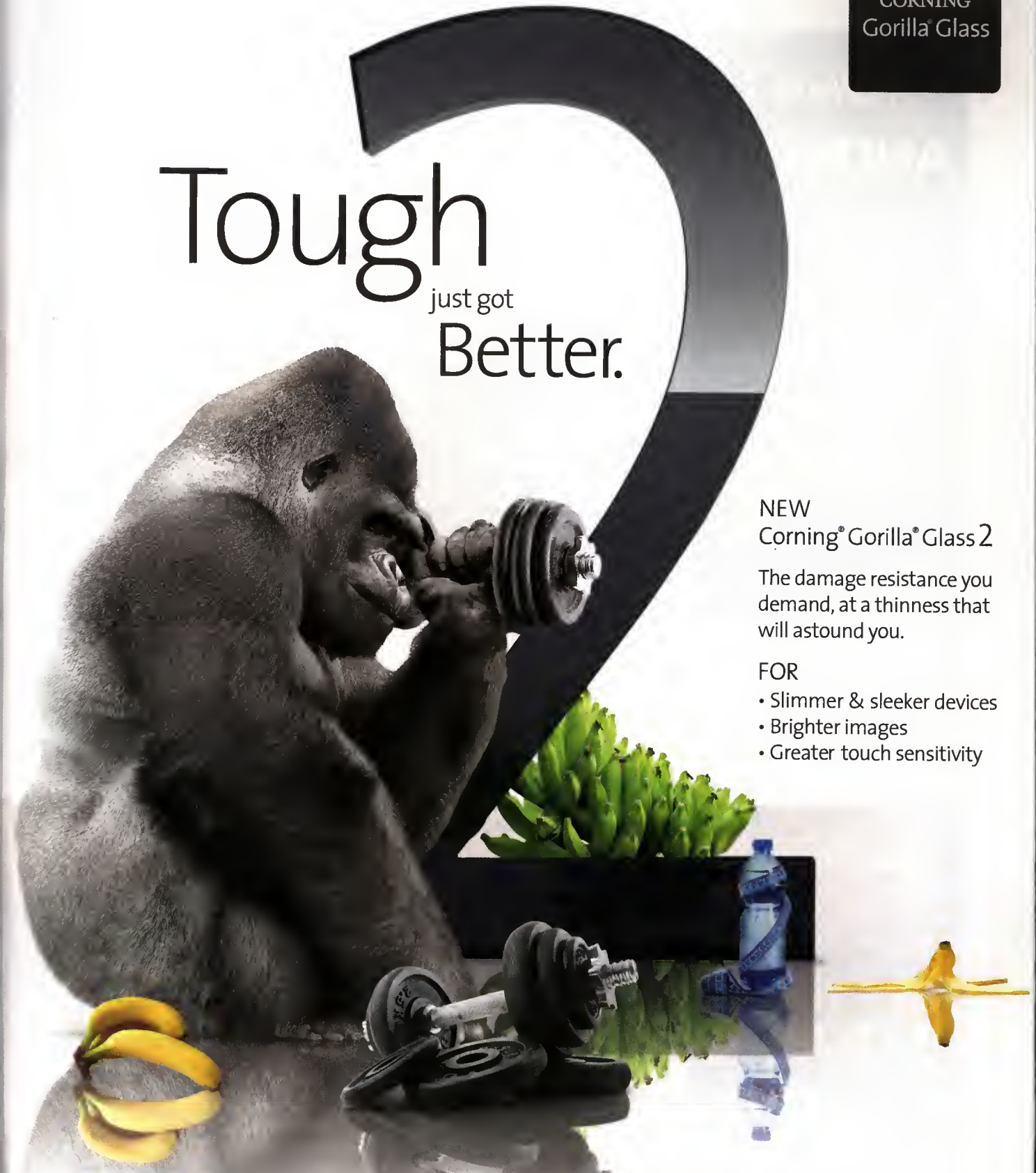

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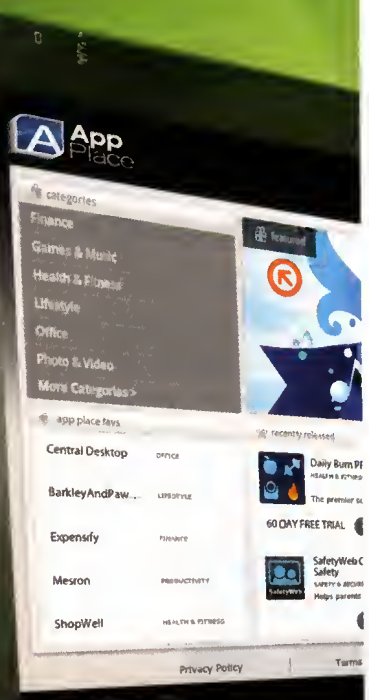

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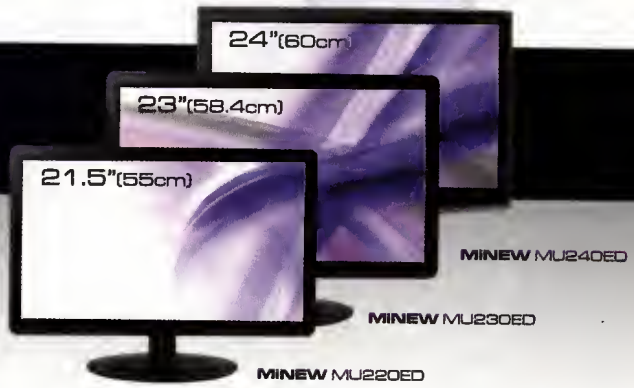

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Editor's Letter

STEVE FOX

The Hidden Price of Free Services

How deceptive online practices sucker consumers into paying for something they don't want. Plus: My farewell to PCWorld.

THAT IRRESISTIBLE WORD *free*? To borrow a line from one of my favorite movies, *The Princess Bride*, "I do not think it means what you think it means."

Anyone who imagines that *free* means "not requiring payment" should prepare for sticker shock. Consider the experience of Executive Editor Tom Spring (see "The Truth About Free Trials," page 79), who let himself be lured into dozens of purportedly free online offers, and then struggled to extricate himself without having to cough up any cash.

As he found, once some of these sites have your credit card info—a requirement for most free trial offers—you may end up paying something, even if you had never intended to.

Free trials are lures. "You can subscribe in under 2 minutes with 2 clicks," Spring says, "but it can take 10 minutes and 15 clicks to read through every screen for clues on how to cancel." With the worst offenders, you can't escape unless you phone the company. But you learn that fact only after slogging through a mind-numbing series of screens. The system seems designed to extract money from consumers who naively think that *free* doesn't entail surrendering cash.

I can attest to how easy it is to fall for misleading offers online. I recently visited FreeCreditReport.com and signed up to get my credit score at no charge. (My loss. I should have gone instead to AnnualCreditReport.com, an excellent free service that *PCWorld* has frequently recommended.) I thought that I had followed all of the rules and checked all of the right boxes to ensure that this would be a one-time-only engagement. But a month later, my credit card statement listed a charge from Experian, the company behind FreeCreditReport.com.

I called customer service to complain and was told that, in signing up, I had agreed to join a credit monitoring service for $19.95 per month. Because I hadn't canceled by phone within seven days, I had inadvertently become a paying customer. The policy was posted in black and white—though the words weren't terribly easy to find on the site.

Spring, who has been reporting on sneaky online behavior for years, doesn't expect the situation to improve for consumers anytime soon. In fact, he thinks, many online companies have fine-tuned their practices to increase consumers' confusion. "That a website can't send you, in a clear and easy manner, to an unsubscribe link is ludicrous," he says. "Given the state of online design, and all the experts these sites employ to oversee Web navigation, I have to believe that many websites have gotten more confusing by choice."

Signing Off

On another note, this is my final "Editor's Letter" for *PCWorld*. After spending nearly four years as editorial director, I am moving on to new adventures. I will, however, continue writing *The Back Page* each month and contributing elsewhere, both in print and at PCWorld.com. It has been a privilege serving you. Thank you all for reading. ●

Steve Fox is editorial director of PCWorld.

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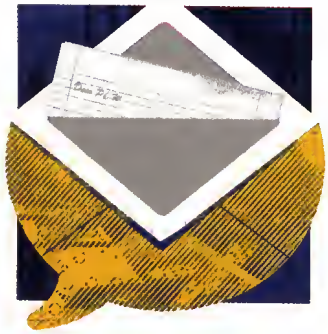
PCW Forum

"Data Snatchers," our August feature on the largely hidden industry that collects, analyzes, and sells personal data found online, drew both fans and critics. Are data miners a real threat to privacy, or are such concerns overblown? Comment at go.pcworld.com/datasnatchers.



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Data Snatchers

Your in-depth article "Data Snatchers: The Booming Market for Your Online Identity" [August] is among the best I have read. It would have been even better if you had also provided instructions on how to find out exactly what "they" know about us, whether as persons, IP addresses, or digital devices.

Edward Kausel, Wellesley, Massachusetts

Editor's reply: Greater transparency in this area may depend on congressional action; for details, see our online article at go.pcworld.com/dataminers.

The author posits a science-fiction "dataverse" where evil powers magically penetrate your Social Security file, credit cards, insurance and medical records, usernames, passwords, and IP and MAC addresses.

All to learn that $6/hour Wal-Mart clerk Joe Schmedley bought a bass boat instead of paying his rent.

Sorry, you don't make your case.

GrossTyro, PCWorld.com forums

Microcontroller Alternative

I was delighted to find an article discussing alternatives to the Arduino microcontroller [*GeekTech*, August], but something was missing: Where was a mention of the Raspberry Pi [see raspberrypi.org]? In my opinion, it's the top of the lineup, not just for its price of $35 or less, but for its power. With a 700MHz processor and a Broadcom VideoCore IV graphics chip, its performance is truly in a league beyond that of the others. Now I think I'll go watch a movie at 1080p on my Raspberry Pi.

Justus Westloh
Middlesboro, Kentucky

> Regarding "Data Snatchers" [August]: George Orwell was right. He was just off by 20 years.
>
> *Davidd0w2*
> *PCWorld.com forums*

No Speed-Trap Apps, Please

In regards to the article "Phone and Driver: Apps for Your Car" [*Skeptical Shopper*, August]: I was disappointed to see that your publication endorses use of an app to help drivers avoid speed enforcement areas. Your reasoning—that it will help drivers save money—is woefully shortsighted.

Each year, almost 40,000 people die in automobile crashes, and the primary cause in many of these crashes is excessive speed. Every death caused by excessive speed is entirely preventable. While a small minority of "speed traps" are just that—traps for motorists to increase ticket revenue—[speed limits] serve to keep the roadways safe.

Thus, while the Trapster app can save people money in the short run, the long-term cost is far higher and more tragic.

Steven Lavrenz, Doctoral Reseorch Fellow
Transportation Engineering
Purdue University, Indiona

Author's reply: *PCWorld* of course endorses obeying speed limits and driving safely. But as the article pointed out, Trapster can alert drivers to a range of potential road hazards. –*Anne Kandra*

Streaming Media

Regarding Rick Broida's wonderful tip on the Plex Media Server utility [*Hassle-Free PC*, August]: In my case, it didn't quite work as he outlined it. In addition to taking the steps he described, I had to download Chrome Frame (from google.com/chromeframe/?quickenable=true) for the Plex Utility to work correctly. The extra download was necessary for both Internet Explorer and the Google Chrome browser itself.

Once installed (with Chrome Frame), the Plex utility was awesome and »

worked as outlined—though the Plex utility accesses without any effort your entire iTunes library (gotta love that).

Finally, I should note that Chrome Frame is technically still a beta product. The utility may quit working and require reinstallation. Though it is a bit buggy, improvement is likely on the way.

R. W. Moyer, Goinesville, Florida

Google's Threats?

I'm surprised and disappointed to see articles like "Managing the Google Threat" [go.pcworld.com/pasdar], and "Google Glass Horror Stories From Your Privacy-Free Future" [go.pcworld.com/privacyfree] on your website. Such fear-mongering is counter to what drives technology. We benefit from enhanced services and experiences from the very technology you lament. While technology can always be used for evil, I want to know what it is capable of achieving without the unwarranted hysteria.

Bryon Emmonuel
Phoenixville, Pennsylvonio

Windows 8

Although the forthcoming Windows 8 has been long awaited, the interface seems a bit too tablet- and mobile-oriented for an operating system that is most renowned for its desktop performance. I'm not at all sure that the user interface will turn out to be very successful for old-school Windows users—not to mention the learning curve that it involves—even with the seemingly dual-personality desktop mode.

Ryon Rodriguez, Round Hill, Virginio

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CORRECTION

IN "THE GREAT Hard Drive in the Sky" (September), we should have stated that MediaFire will eventually delete the files associated with an inactive free account, but that it will not do so before it attempts to contact the user. In addition, MediaFire allows users to share folders with permissions and passwords, but that option does not apply to image files.

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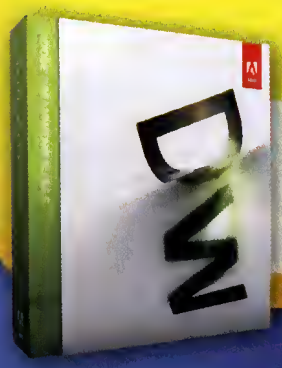

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Car Audio Interfaces: A Nightmare

BY DAN MOREN

All too often, the electronics that carmakers are stuffing into their new models are poorly designed for use by the person who's driving.

WHY ARE SO many car interfaces so darn bad?

I'm not referring to the basic driving components. I'm talking about all the bells and whistles: the navigation systems and multi-CD-changer/satellite radio/media interface/DVD-player entertainment centers.

Sit down in a rental, a Zipcar, or a friend's vehicle, and typically you're confronted by an obtuse set of dials, knobs, sliders, and—worst of all—a touchscreen.

The poor usability of the electronics and media system in my new Volkswagen GTI stand in stark contrast to the rest of the car, which is otherwise well designed. But the audio system lacks the same level of quality.

Fair warning: This article is based on my personal experiences, largely with my GTI.

Bad Touch

I firmly believe that whoever first thought it was a good idea to put a touchscreen in a car should be plopped behind the wheel and forced to try using such a thing.

Sure, we're used to touchscreens: Our phones and tablets have them, as do airport ticket kiosks, ATMs, and even some mall directories.

But a touchscreen is an interface that requires you, the driver, to take your eyes off the road to use it.

It's Interference

Touchscreens are only part of the problem.

For example, we've all used shuffle mode since »

PHOTOGRAPHS: DAN MOREN

time immemorial. Your player shuffles your library into a randomized playlist. If you press Next Track, you hear a new song at random; but you can also go in reverse to hear the previous song.

The audio unit in my Volkswagen doesn't do that—pressing Previous takes me back to a different random song. Each song is an island in a sea of randomness.

The interface isn't much better when I want to select songs to play. It offers options for browsing playlists, albums, artists, and songs, but it forces you to navigate the lists with a touchscreen scrollbar—possibly the worst way to allow a driver to choose a song from a large library. And you can't select music with the nontouchscreen controls.

Softwhere?

The most egregious problem with the car stereo, however, can be laid at the feet of the garden-variety software bug. Similar to many Volkswagen models, the GTI sports a physical media connector and Bluetooth streaming. Sounds nice, right? It did to me, until—on day one of driving the car—I heard The Who's classic "Baba O'Riley" come on and I realized, in puzzlement, that I wasn't hearing the whole song: It wasn't in full stereo.

I determined that the stereo was playing only the right channel of the audio, and I concluded that the Bluetooth streaming of the car stereo was at fault.

Searching on Google, I saw that I was not alone: Many other owners of the 2012 GTI and Passat said their cars suffered from this dreaded condition. So I went back to my dealer, and the salesperson checked with the service department about a software update.

◀ **Satellite imagery:** This button will cease to be useful three months after I bought the car. But it will never go away.

▼ **Button, button:** At least the steering wheel still has tactile buttons. For now.

Here we come to the crux of the problem. In car software, we seem to be back in a predigital age. I had two options: Use Bluetooth streaming in mono mode, which provided the full audio albeit at crappier quality, or stick with the wired connection. For now I've chosen the latter, but a forthcoming software update may fix the Bluetooth problem. That should leave me with 724 other issues to gripe about.

The lesson for carmakers is simple: If your software will be hard to upgrade, get it right and make it bulletproof.

Vox Populi

I've considered attempting to bypass many of the interface problems by using an alternative method of user interaction—such as the iPhone 4S's voice-controlled virtual assistant, Siri.

Unfortunately, I have no easy way to trigger Siri while driving without pressing and holding the iPhone's home button. And due to the aforementioned Bluetooth bug, I have to connect my phone via the car's media cable.

Help may be on the way, though perhaps not for me. Apple, I hear, is working with carmakers to add a button, for triggering Siri, to the steering wheel of many forthcoming models.

Of course, I could always use Volkswagen's own built-in voice-recognition system—if I wanted to torture myself repeatedly. It's slow, limited in its functionality, and incredibly inaccurate, pretty much like the rest of the electronics in this car.

The Whole Widget

"People who are really serious about software should make their own hardware," programmer Alan Kay once said. I'm starting to think that the reverse of this is true, too. All the great hardware in the world isn't worth much unless it has great software to go with it.

Most car manufacturers still seem to think that the best way to build in electronics is by working with partners, and apparently most of those partners know as much about how their software works in an automobile environment as the car manufacturers know about how to build good electronics.

Improving this situation will require a kick in the pants from a company that is truly serious about building a great automobile media experience. Any takers?

After Hotmail: Microsoft Debuts Outlook.com

IN JULY, MICROSOFT previewed a webmail service—called Outlook.com—to replace Hotmail.

Hotmail has fallen far: Nearly a decade ago, it was sitting on top of the webmail heap. Then, as rivals such as Gmail surged, it seemed to lose its way; it even went through at least one rebranding, as Windows Live.

Outlook.com is Microsoft's attempt to gain that mojo back. The Metro interface appears, and with it comes a much cleaner presentation. The result is a 30 percent increase in the number of viewable messages, according to Microsoft. In addition, the company is doing away with large display ads.

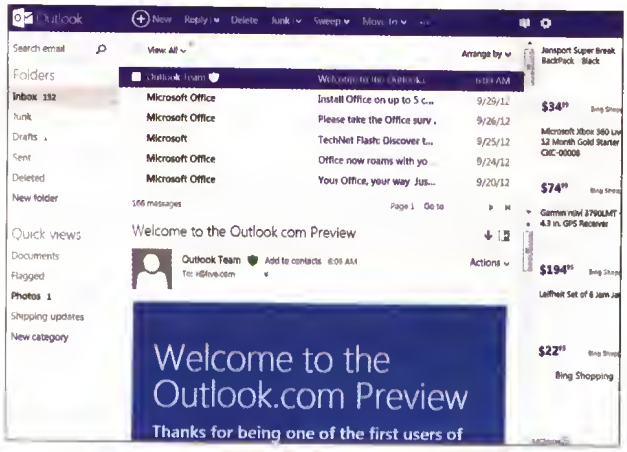
Another major feature of Outlook.com is social networking integration. Instead of the standard email inbox, users will be able to view status updates and content from Facebook, Google, LinkedIn, and Twitter (automatically sorted, as well). Microsoft will enhance the service with Skype.

Outlook will also include free Web-based versions of Word, Excel, PowerPoint, and OneNote, and Microsoft will provide additional storage space for attachments through its SkyDrive service.

An @outlook.com email address will be available to those who request it or sign up through the preview. But longtime Hotmail users can keep their @hotmail.com, @live.com, and @msn.com addresses, as well as their own contacts and settings when using the new service.

So will Outlook.com succeed where Hotmail and Windows Live failed? It may be a bit too early to tell. But the new webmail service certainly takes into account the changes that have been occurring in our online lives.

—Ed Oswald



Microsoft's Outlook.com service will replace the old Hotmail.

ILLUSTRATIONS: ANDERS WENNGREN

BRIEFS

Google Mobile Search Adds Handwriting to Easy Text Input

Google now lets you input a search query on your smartphone or tablet by writing it out with your finger, instead of making you tap it out on a keyboard or say a voice command. Called "Handwrite," the new feature is timely: When Windows 8 starts shipping in October, it will have a similar function. Handwrite removes the pain of pecking, and should be more accurate than voice-activated search.

Hulu Plus Debuts on Apple TV

Apple has quietly added support for Hulu Plus to the Apple TV, bringing the TV- and movie-watching service to paid subscribers. The Apple TV interface for Hulu is very similar to that for Netflix and other video services. Unfortunately, streaming restrictions prevent a substantial number of shows from being viewed on the Apple TV (or any place other than in a Web browser).

Lost Photos Unearths the Images Buried in Your Old Email

If you have an email account, you have a time machine. That's what the developers behind Lost Photos believe. This new Windows and Mac app digs through your email archive and picks out all the images you ever sent or received, freeing you from the daunting task of tackling your disorderly mail archives.

New Sensors for Windows 8 Ultrabooks and Tablets

Coming to Windows 8 Ultrabooks and convertible tablets are five sensors—a compass, an accelerometer, a gyroscope, a GPS sensor, and an ambient light sensor—that will give users more ways to interact with the portable devices, an Intel blog post says. All five are required for a convertible tablet to be branded as an Ultrabook; an Ultrabook laptop must have three.

Belkin's new AC1000 dual-band router supports 802.11ac.

Faster Wireless Is on the Way

IEEE 802.11AC, the latest wireless networking standard, isn't actually finished yet. Today's 802.11ac routers are based on a second draft. But no compatibility problems have surfaced to date.

No manufacturer is selling an 802.11ac USB Wi-Fi adapter today, so your existing laptop computer won't benefit from the significant speed boost that the new technology promises to deliver. Because 802.11ac routers are backward compatible with the older 802.11n standard, you'll still be able to connect your existing wireless gear to the new routers, though you won't gain any performance boost.

The real reason to buy an 802.11ac router today is to stream high-definition video to and from the devices in your entertainment center, such as your Blu-ray player or home-theater PC. To do that, you must purchase an 802.11ac ethernet bridge as well as an 802.11ac router (or you could buy two routers and configure one as a bridge). The bridge will establish a wireless connection to your 802.11ac network, and you'll hardwire your devices to the bridge. Buffalo Technology is the only manufacturer that offers a purpose-built 802.11ac ethernet bridge today: Its WLI-H4-D1300 model is street-priced at $180.

The 802.11ac standard remains a work in progress, and the IEEE won't publish the final version until sometime in 2013. If you are an early adopter who needs better performance now, and can afford the devices, go for it. But if you're worried about getting burned if the IEEE changes direction—unlikely as that possibility may be—wait for the dust to settle.

—Michael Brown

TECH SPOTLIGHT: IOS AND ANDROID STYLUSES

APPLYDEA MAGLUS The Maglus, from Irish company Applydea, is a high-quality stylus for writing on your tablet. Its firm and highly sensitive rubber tip isn't the smallest available, but it provides a very accurate writing experience. It costs €20 (almost $25), and attaches magnetically to your iPad or Smart Cover to keep you from losing it.
go.pcworld.com/maglus

ADONIT JOT TOUCH At $99, this stylus is pricey, but it has additional features and technology. It connects to second- and third-generation iPads via Bluetooth, allowing pressure-sensitive writing and sketching. Shortcut buttons let you switch to Undo and Erase, and a unique plastic tip lets you see what you're writing or sketching through a clear disk.
go.pcworld.com/jottouch

KENSINGTON VIRTUOSO STYLUS/PEN If you want a stylus to clip in your breast pocket, Kensington's Virtuoso Stylus/Pen is a slick pen analog that may fill the bill. It feels just like a pen in your hand. In fact, you can turn the stylus into a functioning ballpoint pen by popping off its cap. At $15, it's also one of the least expensive styluses you can buy.
go.pcworld.com/virtuoso

SENSU BRUSH The Sensu Brush is a unique tool for artists who are looking to unlock their tablet's creative potential. Though it has a standard rubber head, the $40 Sensu Brush's bread and butter is its conductive brush tip, which lets you "paint" using the same brushstrokes and technique that you would employ with a real paintbrush.
go.pcworld.com/sensubrush

Amazon Enhances Its Cloud Player Service

TAKING AIM AT Apple's iTunes Match, Amazon has made sweeping changes to its Cloud Player service.

Now Cloud Player provides free access to all past and future Amazon MP3 purchases. It can also scan your iTunes and Windows Media Player libraries and match the songs on your Mac or Windows PC with those in Amazon's catalog of 20 million songs.

Songs that it matches don't need to be uploaded, which saves you lots of time and bandwidth assembling your music collection in the cloud.

This is exactly how Apple's iTunes Match service works (albeit with AAC files instead of MP3s). The big difference relates to how many tracks you can store. iTunes Match, which costs $25 a year, lets you upload or match up to 25,000 tracks (excluding any items purchased from the iTunes Store).

Amazon's Cloud Player Free version stores all of your Amazon MP3 purchases and gives you space for 250 tracks; but for the $25 a year that Apple charges, Amazon offers Cloud Player Premium, with room to store 250,000 tracks—10 times as many as iTunes Match holds.

Cloud Player works on Android devices (including Amazon's own Kindle Fire), the iPhone and iPod Touch, and via a Web browser on your computer. But Amazon says that it will also bring Cloud Player support to Roku and Sonos streaming hardware in the future.

—Jonathan Seff

Microsoft Announces New Hardware for Windows 8

MICROSOFT RECENTLY announced new keyboards and mice optimized for tablets and laptops running the Windows 8 operating system.

The new devices are lighter and more mobile than their predecessors, and will work with tablets running Windows 8 (due for release on October 26). They are wireless and use Bluetooth, cutting dependence on USB ports.

Microsoft's new mice and keyboards will debut around the time of the Windows 8 launch, Microsoft said in a statement. The company will release its Surface tablet with Windows at approximately the same time.

The $80 Microsoft Wedge Mobile Keyboard is a full-size keyboard designed for tablet users (for more, see *Staff Picks*, page 23).

The $50 Microsoft Sculpt Mobile Keyboard builds in a 6-degree curve, much like Microsoft's ergonomic keyboards. It has a number of Windows 8–specific hotkeys, and offers ten months of battery life in active use.

Earlier this year, Microsoft's Hardware Division announced that it would be updating the Touch Mouse to include new functionality designed for Windows 8, with support for new gestures that will help make navigation easier.

Microsoft's Sculpt Touch Mouse, also priced at $50, has a four-way touch scroll strip, to simplify navigating through the Windows 8 Start screen. By swiping a finger on the panel, users can easily navigate through multiple panels on the Start screen. The mouse also supports easier navigation through documents. Similarly, the $80 Microsoft Touch Mouse incorporates finger swipes and other movements for convenient navigation.

The $70 Microsoft Wedge Touch Mouse can shut down when a tablet goes into sleep mode, thereby extending the mouse's battery life. Smaller than a traditional mouse, it's designed for mobile use—you can fit it into a pocket and work on any surface.

The accessories will work with devices based on Intel processors, and with Windows RT devices based on ARM processors. The new keyboards and mice are also compatible with Windows 7, Vista, and Mac OS, though some features may not work.

—Agam Shah

Microsoft's Wedge Touch Mouse can fit in a pocket—it's that compact.

Republic Wireless Reopens

A CARRIER THAT offers a hybrid wireless service with unlimited voice, text, and data for $19 a month has announced that it will accept new subscribers. Republic Wireless (republicwireless.com) also said that it has added a new model—the Motorola Defy XT—to its handset lineup.

The company, owned by Bandwidth.com, quickly sold out its original allocation of handsets when it launched last November.

When a subscriber makes a phone call or accesses a network, the handset first tries to connect through a Wi-Fi network. If that fails, it will use a cellular network.

A customized handset for the system costs $249.

—John P. Mello, Jr.

Motorola's Defy XT handset.

GEEKTECH

Learn New Tech Skills for Your Projects

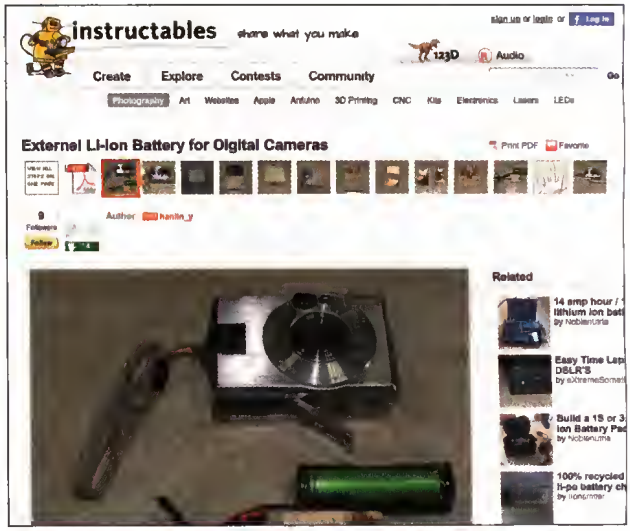
Creating your own hacks is a terrific way to teach yourself new skills to bring off projects in unfamiliar areas.

HERE AT *GEEKTECH*, we feature all sorts of inventive projects—everything from cardboard robots to music made by scanning barcodes. The people who make these sorts of creations possess incredible imagination and ingenuity.

However, not knowing everything about coding or engineering shouldn't prevent you from making something cool. In fact, doing your own hacks is a great way to teach yourself some valuable new skills.

One person who has done this more than a few times is Tom Scott (tomscott.com)—a self-described "maker of things." With his impressive history of hacks, Tom is used to working in unfamiliar territory.

He tells *GeekTech*, "Most of the skills I've learned have come from the things I've made. Rather than learning for the sake of it, I learn because I need to."



Instructables is a great site for learning about hardware hacks.

Any tech project originates with an idea. But once he has established that starting point, where does Tom go from there? He explains: "The idea tends to arrive, fully formed, and then I've got to work out how to build it. Sometimes it just isn't practical... Most important is how to make it quickly: I have a worrying tendency to lose interest in things after a while...!"

So it's possible—and not unusual—to teach yourself new tricks as you go about the process of developing a hack. But how can you actually do it?

My first recommendation is to break down your idea and figure out what it means from a technical perspective. Read about your selected topic online and try to get some idea of which bits of the puzzle you'll need to put together. Once you know the basics of the technology you're working with, you'll find it easier to know which bits you need to look for specifically.

You can find plenty of great guides and tutorials; and as a starting point, you can reuse what other people have made available, such as open-source software.

Two sites that are worth watching for work you can build on are GitHub (github.com) and Instructables (instructables.com). GitHub is particularly useful if you're doing a coding project, while Instructables is great for learning about hardware hacks.

Finally, don't feel too proud to ask for help. If someone has managed to do something that has stumped you, send them a message and ask for advice. And Tom adds, "Never stop!"

—Jonathan Cresswell

Visit the GeekTech blog at go.pcworld.com/geektech for hacks, tips, and hardware news.

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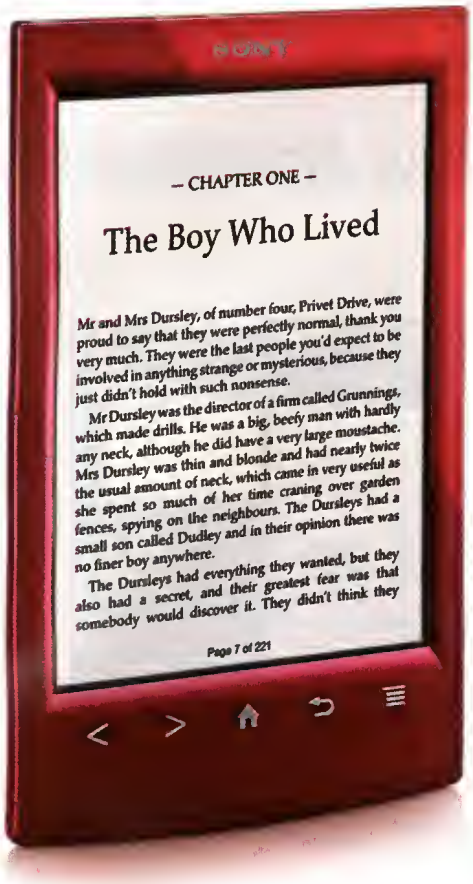
Staff Picks

NEW PRODUCTS THAT HAVE OUR EDITORS DROOLING

Samsung ES9000

This impressive LED HDTV from Samsung sports a whopping 75-inch screen with a bezel that's just 0.31 inch thick. The ES9000 is controllable by voice and gesture, and even has a built-in Skype camera. These stellar qualities don't come cheap, however. It costs $10,000.
go.pcworld.com/samsunges9000



Sony Reader PRS-T2

Sony's newest ebook reader has a 6-inch touchscreen, easily downloads ebooks from your public library, and won't run out of battery power for seven weeks, according to Sony. The $129 reader also includes features from Facebook and from Evernote Clearly, which makes Internet content easier to read.
go.pcworld.com/sonyreaderprs-t2

Roku Streaming Stick

Roku's Streaming Stick provides all the features of a full-size Roku media streamer in a package the size of a USB thumb drive. Sounds great, but, to use it, your HDTV needs an MHL port. The price for this Roku is not yet set, but is expected to be comparable with Roku's box media streamers, which start at around $50.
go.pcworld.com/rokustreamingstick

Microsoft Wedge Tablet Keyboard

Microsoft's Wedge Keyboard is sleek, lightweight, and packs hot keys for use with Windows 8. The included keyboard cover folds into a tablet stand. The $80 keyboard is Bluetooth compatible, and is powered by two AAA batteries.
go.pcworld.com/microsoftwedgekeyboard

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Relief From Mobile Minutes Charges?

T-Mobile's Bobsled and other Web voice services could take a big bite out of wireless carriers' profits—and consumers could ultimately benefit.

BY PAUL KAPUSTKA

SAVVY PHONE CONSUMERS can keep their voice-minute needs to a minimum by taking advantage of "over-the-top" services, which provide voice, video, messaging, and more via your device's Internet data connection, for free or for much less than standard voice-minute plans charge. You can save even more by using an OTT service through your device's Wi-Fi connection, since Wi-Fi services are much less expensive than mobile networks are for high-bandwidth applications like video chat.

If you use an OTT service over your device's regular wireless data connection, you need to pay attention, because it could chew up more data than you intended, incurring overage charges and eliminating any cost savings.

T-Mobile's Bobsled lets you call regular phones for free.

Skype, FaceTime, and Bobsled

Two of the best-known over-the-top services are Skype and Apple's FaceTime. Skype is an app that provides free calling, video chat, and messaging between Skype users, typically on desktop or laptop PCs, and can make calls to regular phones for a cost. It is also available for iOS, Android, and Windows Phone, though with some limitations; Skype's mobile implementations require some user gymnastics to set up, as well.

FaceTime lets owners of Apple products conduct video chat sessions with one another. But until Apple's iOS 6 operating system ships this fall, FaceTime will work only over Wi-Fi.

A more recent option is Bobsled, which T-Mobile originally launched as a way to initiate calls from a Facebook page. Bobsled has since morphed into a full-featured Internet voice app for Android and iOS, but not for Windows Phone and BlackBerry. All Bobsled calls are free, and the service's Facebook integration (such as the ability to leave voice messages on friends' Facebook walls) may be of considerable interest to people who spend most of their online time on Facebook.

T-Mobile USA says that the Bobsled service has attracted 2 million users, who have made more than 10 million calls since the app's debut in April 2011—80 percent of them to numbers outside the United States. T-Mobile also notes that 95 percent of Bobsled's users aren't T-Mobile customers. »

Video Chat From Tango, OoVoo

Another area attracting over-the-top innovation is video chat, where two or more people use mobile phones or desktop connections to have a virtual-reality interaction. One service in this market is Tango, which debuted in autumn 2010 and claims 45 million registered users.

You can set up Tango with just a name and a phone number. Another appealing feature is the ability to turn off the video in midcall. Tango works over cellular connections and Wi-Fi, and offers client software for iOS, Android, and Windows Phone devices, and for PCs.

The rival OoVoo video chat service says it has an installed base of 46 million users. It lets up to 12 people participate in a group video chat. OoVoo offers a free version, a premium version ($30 per year or $3 per month), and a new Facebook app. The premium version eliminates ads, allows screen sharing, and has "priority support," OoVoo says.

Can Carriers Compete in OTT?

Eventually the major wireless carriers may give up on their voice and messaging cash cows and try to compete on features. An expected shift in phone billing occurred in late June, when Verizon unveiled its first attempt at so-called family plans, which allow users to bundle multiple devices together under a single data-services contract.

Though the family-plan approach cuts the costs of separate voice and messaging plans, it doesn't result in savings for every user. Nor does it match the flexibility of video or voice chat services that are portable across multiple platforms and work with a single username.

We may have to wait several years for victors to emerge in the over-the-top marketplace, or perhaps we'll be stuck with a mixed bag of similar but incompatible offerings. I haven't even mentioned the OTT services available from voice providers such as Vonage and device manufacturers like Samsung.

ON YOUR SIDE

BACK IN MAY, I purchased a new HP Elite 21.5-inch LCD monitor from Groupon. I got the monitor pretty quickly and noticed on the box that it came from uBid. I put the unopened box aside for a few weeks as I was in the middle of moving.

When I finally got around to setting it up, I noticed that the cable was not HDMI or VGA, but some other kind of cable I had never seen before. The box read "DisplayPort," so I found a DisplayPort-male-to-HDMI-male cable on Amazon. I tried the cable with no luck. The monitor had power from the included cable, but no display. My desktop and laptop never recognized the monitor, even after I installed the included drivers. A DisplayPort-male-to-HDMI-female adapter didn't work, either.

I called Groupon's support number and explained that the description of the monitor was very deceiving and that I had exhausted all efforts to get it to work, but a representative told me that Groupon couldn't do anything, since it was past 14 days. I also called uBid, which said it was involved only in the shipping and couldn't do anything, either. I am out $144 with a monitor that doesn't work. Please help!

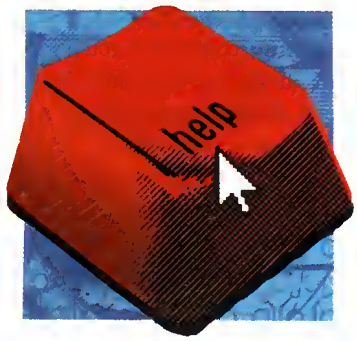
—Bryan Barton, Franklin, Tennessee

ANNE KANDRA

OYS responds: We contacted Groupon about Barton's problem, and a representative confirmed that Groupon's policy does, in fact, require customers to contact them within 14 days upon receiving merchandise. However, after reviewing Barton's history as a loyal Groupon customer, the company made a one-time exception and accepted return of the unwanted monitor. "It's really important to us to keep our best customers happy," said the representative.

But even if you're a faithful customer, don't count on getting an exception. Instead, always check the return policy before you buy; and as soon as you receive your order, make sure that everything works properly.

Recall Alert: Nikon Digital SLR Camera Battery Packs



Nikon is recalling its EN-EL 15 rechargeable lithium ion battery packs due to a recently discovered burn hazard. According to the company, the battery packs can short-circuit, overheat, and melt.

Sold with Nikon's D800 and D7000 digital SLR cameras, the battery pack has the model number "EN-EL15" and the spec "7.0V 1900mAh 14Wh" printed on its back. Only battery packs that have an *E* or an *F* as the ninth character of the 14-digit lot number located on the back of the battery pack are included in this recall.

✉ Have you run into a problem involving customer service, a warranty, a rebate, or the like for your tech gear? Email us at onyourside@pcworld.com.

ILLUSTRATION GARY NEILL

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SKEPTICAL SHOPPER

The Wary Traveler's Guide to Online Vacation Planning

Help ensure that your vacation is a memorable pleasure, instead of a never-to-be-forgotten nightmare, by doing the necessary research.

WITH COOLER WEATHER and smaller crowds, autumn is a great time for a vacation getaway—and you can find terrific travel deals online. Here are some tips to help you plan a thoroughly refreshing retreat, without breaking the bank.

Shop around: The Web has so many travel-related websites that you may be tempted to go straight to an old standby like Expedia or Travelocity. But you'll benefit from taking a few extra minutes to compare prices at four or five (or more) sites.

Kayak compiles search results from various major travel sites, simplifying price and itinerary comparisons. But those big travel sites may exclude budget airlines such as AirTran, JetBlue, and Southwest, so visit company-specific sites, too.

If you're in no hurry to depart, you can rely on a price-watch feature (available at many travel sites) to notify you when fares drop. Bing Travel has a price predictor that advises you whether to buy your ticket now or wait, based on whether fares seem likely to rise or fall.

Be flexible: The more flexible your travel plans are, the likelier you are to secure a good deal. Most of us can't change our schedules to suit the pricing whims of the travel industry, but a little inconvenience can yield a big payoff.

Sites like Hotwire and Priceline serve up excellent bargains to adaptable travelers. You plug in the basics of when and where you want to go, and the site offers deals that match your parameters. You won't know your airline, your flight itinerary, or your hotel until after you pay for the deal. If you specify a four-star hotel in midtown Manhattan, however, that's what you'll get.

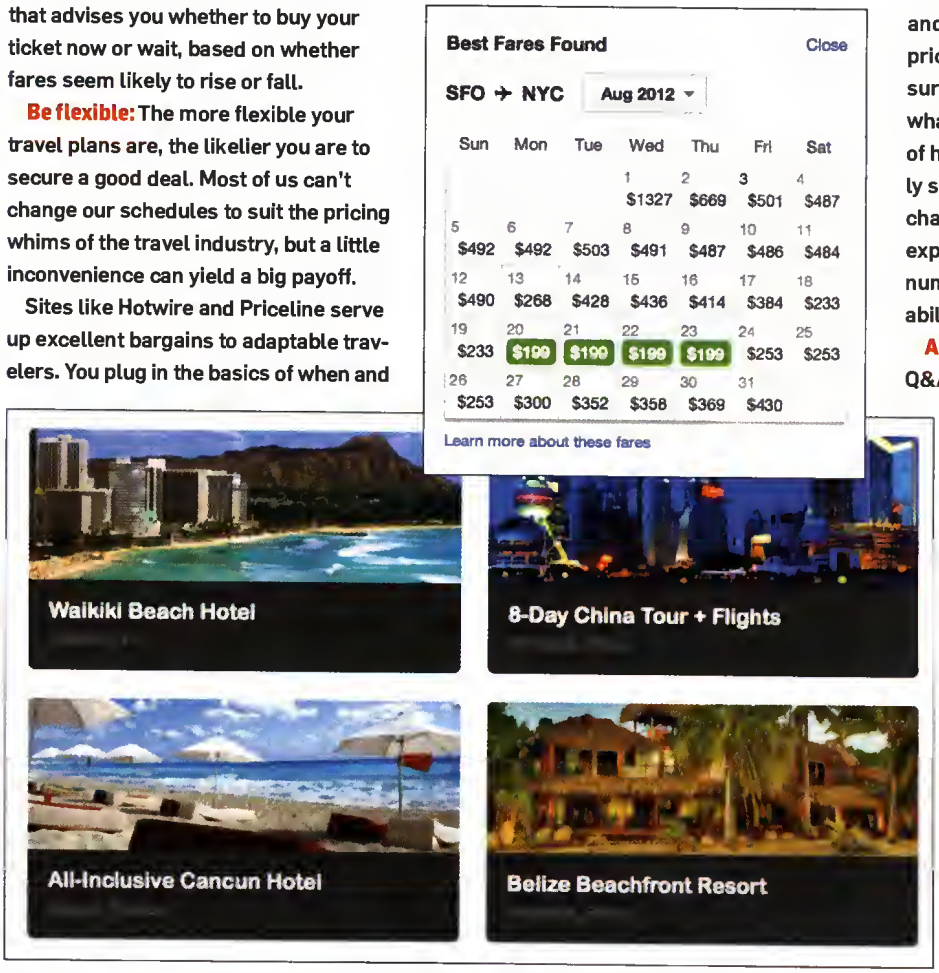
Read the fine print: Before you book, be sure to check the relevant policies on cancellation, rebooking, and refunds. Some sites, such as Travelocity, offer low-price guarantees and 24/7 customer support if you like a little extra reassurance.

Popular social networking sites such as Groupon's Getaways and LivingSocial's Escapes issue vouchers redeemable for travel to a multitude of domestic and international destinations. The prices look irresistible, but make sure that you understand exactly what your payment covers. Beware of hidden fees (such as unexpectedly steep taxes and "cleaning fees" charged at checkout), blackout and expiration dates, restrictions on number of travelers and transferability, and other hidden gotchas.

Ask questions: Groupon has a Q&A link for users to post queries directly to hotels. Look these over for questions you may not have considered. Check reviews at such sites as TripAdvisor for trends and common complaints. Find out what the hotel's regular rates are, and ask whether it offers any other promotions that may suit your travel needs.

Don't wait: Travel costs are capricious. Planning a vacation well involves covering a lot of details before you pack your bags; but if you wait too long, you may have to give up the Caribbean beach resort for a backyard lawn chair.

—Anne Kandra



Kayak (top) compiles fare charts, while LivingSocial Escapes shows group travel deals.

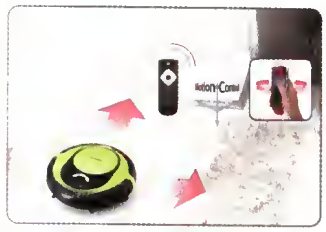
MONEUAL

Feel the New Hybrid Invention

Hybrid Robot Cleaner

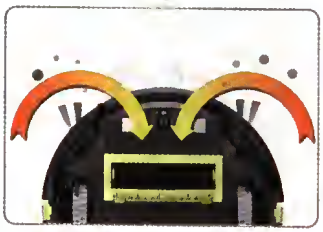
Vacuum and Dry Mop

Experience MR6550



Motion Remote Controller

Motion controlled remote enables convenient control with just a light tilt motion of the hand



Twin Side Brushes

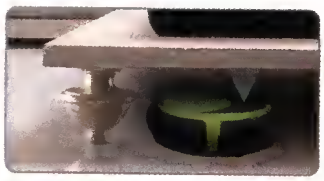
Twin side brushes attached to each side help cleaning in all nooks and corners where standard vacuums typically cannot reach

Detachable Microfiber Mop

The Microfiber Mop is conveniently attached and clean hard floor surfaces. The Robot Cleaner automatically recognizes the presence of the Mop Attachment and will avoid carpeted area or rugs while cleaning.

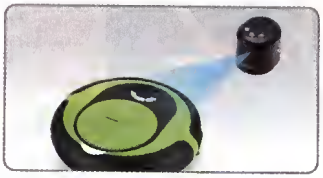
BLDC Motor

The BLDC suction motor is the most powerful in its class with superb durability that lasts 5,000 hours – ten times longer than a general DC motor – for powerful, effective cleaning.



Shadow Active

MR6550 is able to detect and remain in shadowed spaces, to focus cleaning in dark spaces such as beneath furniture



Room Indicator

Room indicator feature prevents Robot Cleaner from entering certain specified areas while on cleaning mode. Room Selection Feature increases cleaning efficiency by dividing a single living space up to 3 different areas

Lithium Iron Phosphate (LiFePo4) Battery

4th generation Lithium Iron Phosphate Battery, is environmentally-friendly, it also features over three times of battery recharge cycle than Nickel or Lithium-Ion/ Polymer Battery. (Over 1,000 charges/usages in its lifetime)

High efficiency HEPA filter

With the high efficiency HEPA(High efficiency Particulate Arrestance), 0.3um of particles such as the house dust, ticks, virus and molds can be removed up to 99.97%.

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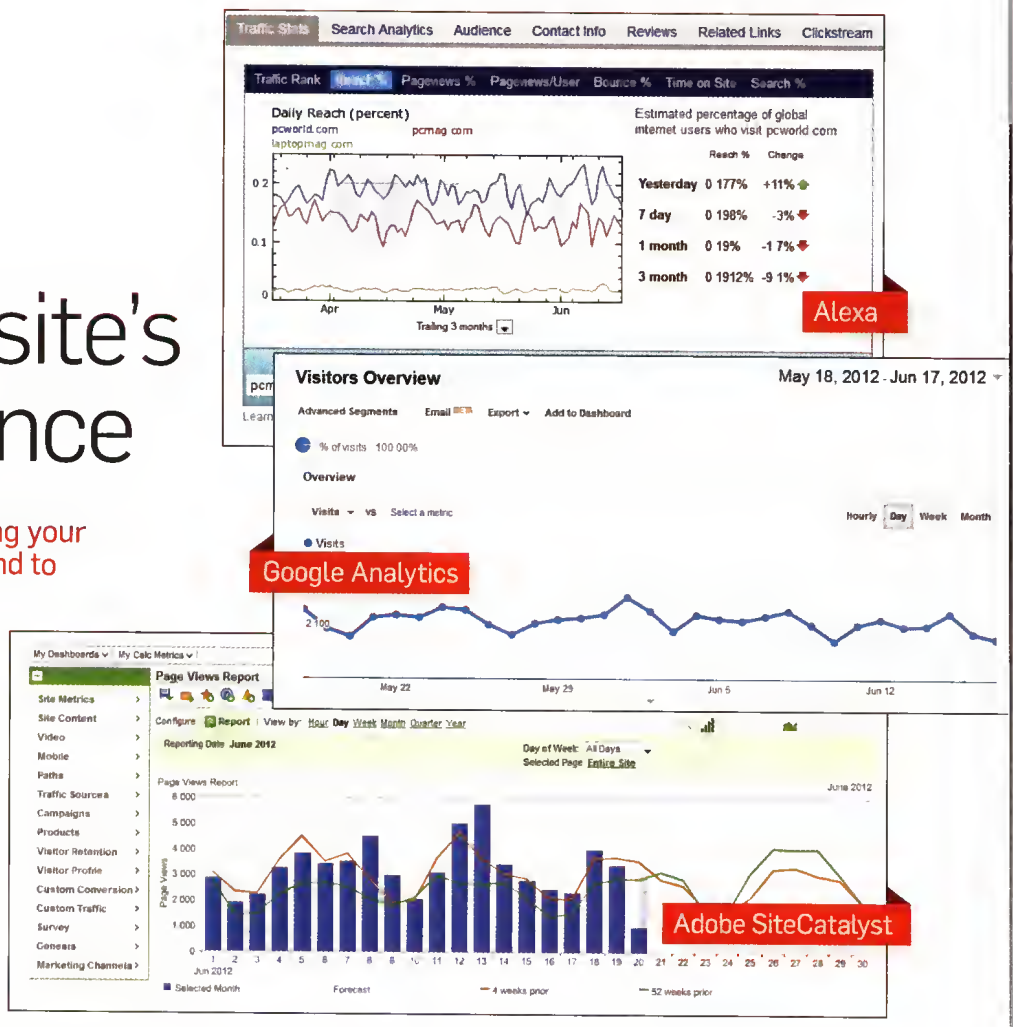
J120810-1

Analyze Your Website's Performance

Understanding who is visiting your website is critical if you intend to make it big on the Web.

BY CHRISTOPHER NULL



BUILDING A WEBSITE has always been a challenge. You have complete control over your content, but virtually no control over who's consuming it. Thanks to a handful of well-honed Web-analytics services, however, you can draw deep insights about your website's visitors: Where do they live, when do they come to your site, how long do they spend there, and, critically, how many of them are coming every day? Following is a quick look at the leading analytics services.

First, a word of caution: Remember that analytics are just a snapshot of your site at a point in time (or a range of times). Don't start second-guessing yourself, trying to figure out why one page did well and another performed badly. The power of social media can turn a quick blog post into an unexpected hit. You can spend years trying to re-create the magic, but that rarely works—and you might exhaust yourself building a lot of the same kinds of content, which no one ends up reading.

Google Analytics

Most websites that use analytics rely on Google Analytics. It's easy to use, and it's free if your site has 10 million page views per month or less. (After that it's a hefty $150,000 a year.)

When you register—a standard Google account is all you need—you get a unique snippet of code. Just place it on your site's template so that it appears on each page. Google then collects data every time a visitor's browser loads that code.

After a few days, log in to your dashboard. The traffic graph sits up top. Use the drop-down arrow next to the date to tweak the timeline you're analyzing, and use the *Compare to post* checkbox to overlay a previous period's data. You can swap between viewing Visits, Uniques, and Pageviews (among other metrics) by using the selector beneath the Overview tab.

On the left are links to more detail. Clicking *Demographics* ▸ *Location* generates a map of where your visitors live. Use the buttons underneath to generate a pie chart from this data.

Click *Traffic Sources* ▸ *Sources* ▸ *All Traffic* to see where users are coming from. Under this header, the *Search Engine Optimization* ▸ *Queries* link will give you a sense of the search keywords that have the potential to lead to your site. The *Content* ▸ *Site Content* ▸ *All Pages* link is where you'll learn which pages or products are generating the most traffic. Adjust the timeline to ferret out long-term and short-term trends.

One of Google Analytics' selling points is its ability to »

connect to your AdWords campaign (so you can track whether your ads are drawing visitors). If you run ads on your site, click *Content* ▸ *AdSense* ▸ *Overview* to see which pages are earning the most revenue. Note that you'll need to link your accounts in the AdSense tool first.

Adobe SiteCatalyst

SiteCatalyst became part of Adobe in 2009, and Adobe continues to update it regularly. Exhaustive and in-depth, SiteCatalyst is suitable for deep dives when Google Analytics fails to get the job done. Many businesses use both tools.

Pricing is individualized based on each business and its traffic; Adobe refused to give us any details. Anecdotal commentary on the Web suggests that you should expect to pay six figures for basic service, which puts it within reach for only very large Web-centric businesses.

SiteCatalyst can look complicated at first glance. Use the left sidebar to hit the highlights. Your traffic graph is under Site Metrics, and your top pages are under *Site Content* ▸ *Pages Reports*.

SiteCatalyst excels at reporting on the finer points of a campaign, including deep mobile stats, video plays on your site, and a breakdown of your search traffic, such as whether it's paid or organic. You can easily get lost in all these reports, so be sure to use the email function to have them sent to you.

Alexa

Finally, a few words about Alexa, a free traffic-measurement tool that is now part of Amazon.com. Its numbers are rarely accurate because they're largely based on reports from a browser toolbar few Web users have installed. On the plus side, Alexa makes all of its data available publicly, so you can use it to get a rough sense of how popular your website is relative to the competition—something that's impossible to do with a standard analytics tool. Just don't put too much weight on the figures.

SIMPLY BUSINESS

Make Gmail Easier to Live With

RICK BROIDA

If you're moving from a traditional mail client to Google's mail service, these tips and tools can ease the transition.

MOVING FROM OUTLOOK (or another mail client) to Gmail can be jarring. It means giving up the folder system you've used for years, getting accustomed to a new interface, and so on. Here's some advice.

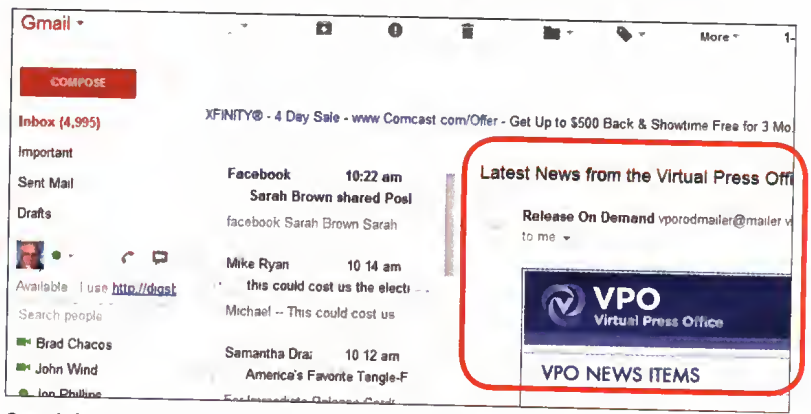
Enable Preview Pane: One aspect of Gmail you might dislike is that you have to click a message to read it, since Gmail lacks a preview pane. In fact, Gmail has one, but it's a Google Labs experiment. The aptly named Preview Pane makes Gmail decidedly more Outlook-like, giving you a three-column view with an instant preview of any message you click. It's my single favorite Gmail tweak ever, since it makes the service a lot easier to tolerate. For more details, see go.pcworld.com/gmailpreview.

Learn to use labels and filters: As someone who has lived in Outlook for about a decade, I find it difficult to give up the folder system I know and love for Gmail's total lack of message organization. But once you accept the concept of labels and filters (and learn to use Search instead of rummaging through folders), it's not so bad. Google's support pages offer brief tutorials on using filters and labels.

Install Smartr Inbox: Xobni's Smartr Inbox add-on for Gmail (go.pcworld.com/smartrinbox) emulates Outlook's social-network connectors, installing a Gmail sidebar that displays the Facebook, LinkedIn, and Twitter profiles for your contacts. That's handy enough, but Smartr Inbox also goes further, showing your relationship history, recent communication, and common contacts. Once you start perusing these useful nuggets of information, you'll find them indispensable.

One note: Smartr Inbox works with Chrome, Firefox, and Safari, but not Internet Explorer. Seriously, though, it's so useful, it's worth switching browsers.

While I'm on the subject of Gmail add-ons, I cannot speak highly enough of Boomerang for Gmail (go.pcworld.com/boomerang), which lets you schedule email for sending later and helps you prioritize your inbox. It doesn't necessarily ease the transition from Outlook, but it does make Gmail infinitely more awesome.



Google's experimental Preview Pane for Gmail lets you see messages instantly.

What's at risk if bad power damages your business network?

Only APC Back-UPS delivers unsurpassed power protection *and* real energy savings.

Today's cost-saving Back-UPS

For years you've relied on APC Back-UPS™ to protect your business from expensive downtime caused by power problems. Today, the reinvented Back-UPS does even more. Its highly efficient design noticeably reduces energy use, so you start saving money the minute you plug it in. Only APC Back-UPS guarantees to keep your electronics up and your energy use down!

Unique energy-efficient features

Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby. Automatic voltage regulation (AVR) adjusts the under-voltages and overvoltages without using the battery. With our patent-pending AVR bypass, the transformer kicks in only when needed and automatically deactivates when power is stable. Plus, highly efficient designs by APC reduce power consumption when power is good and extend runtimes when the lights go out. Together, these power-saving features eliminate wasteful electricity drains, saving you about $40 - $50 a year. And managing today's Back-UPS couldn't be easier thanks to an integrated LCD that provides diagnostic information at your fingertips.

Trusted insurance for all your business needs

The award-winning Back-UPS provides reliable power protection for a range of applications: from desktops and notebook computers to wired and wireless networks to external storage. The reinvented APC Back-UPS is the trusted insurance you need to stay up and running and reliably protected from both unpredictable power and energy waste!

APC power protection products are available at: BEST BUY OfficeMax STAPLES that was easy. Office DEPOT

Keep your electronics up and your energy use down!

Back-UPS models are available with the features and runtime capacity that best suit your application, and many models have been designed with power-saving features to reduce costs.

The High-performance Back-UPS Pro Series

High-performance Back-UPS Pro units deliver cost-cutting, energy-efficient features. Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby, eliminating costly electricity drains. *(BR700G shown above)*

The Energy-efficient ES 750G

The ES 750G boasts innovative power-saving outlets, which automatically shut off power to controlled outlets when the computer plugged into the host outlet is deemed asleep, eliminating wasteful electricity drains.

- 10 outlets
- 450 watts / 750 VA
- 70 minutes maximum runtime
- Coax and telephone/network protection

The Best-value ES 550G

The ES 550 uses an ultra-efficient design that consumes less power during normal operation than any other battery backup in its class, saving you money on your electricity bill.

- 8 outlets
- 330 watts / 550 VA
- 43 minutes maximum runtime
- Telephone Protection

Enter to win one of seven Back-UPS BR700G units (a $130 value)!

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TECH AUDIT

Google+ App Brings Hangouts Video Chat to the iPad

TONY BRADLEY

THE GOOGLE+ APP for the iPad is finally here. Aside from adding a bit of Flipboard-esque flash to the way you surf updates from your social network, the app also turns Google+ into a solid business tool with the inclusion of Hangouts, the Google+ video-chat capability.

One of the crucial pieces missing for Google+ has been an iPad app. Sure, the iPhone app works—in a technical sense—on an iPad, but only in a small, iPhone-size window or in a grainy, magnified version that doesn't take advantage of the display size or capabilities of the tablet.

The new iPad-specific app delivers Google+ in stunning, crisp Retina resolution. That fact alone makes Google+ users exponentially more likely to engage the social network at all from an iPad. But when you combine Google+ Circles with Hangouts, and make everything available from a versatile mobile device like the iPad, it opens new options for productivity on the go.

Although the Hangouts feature has been an option on Android smartphones and tablets since December 2011, until now the iPad has been hobbled with the Hangout-less iPhone version of the Google+ app. Since the iPad is by far the dominant tablet among consumers and business users, however, expanding Hangouts to the iPad provides a much broader audience of possible Hangouts participants.

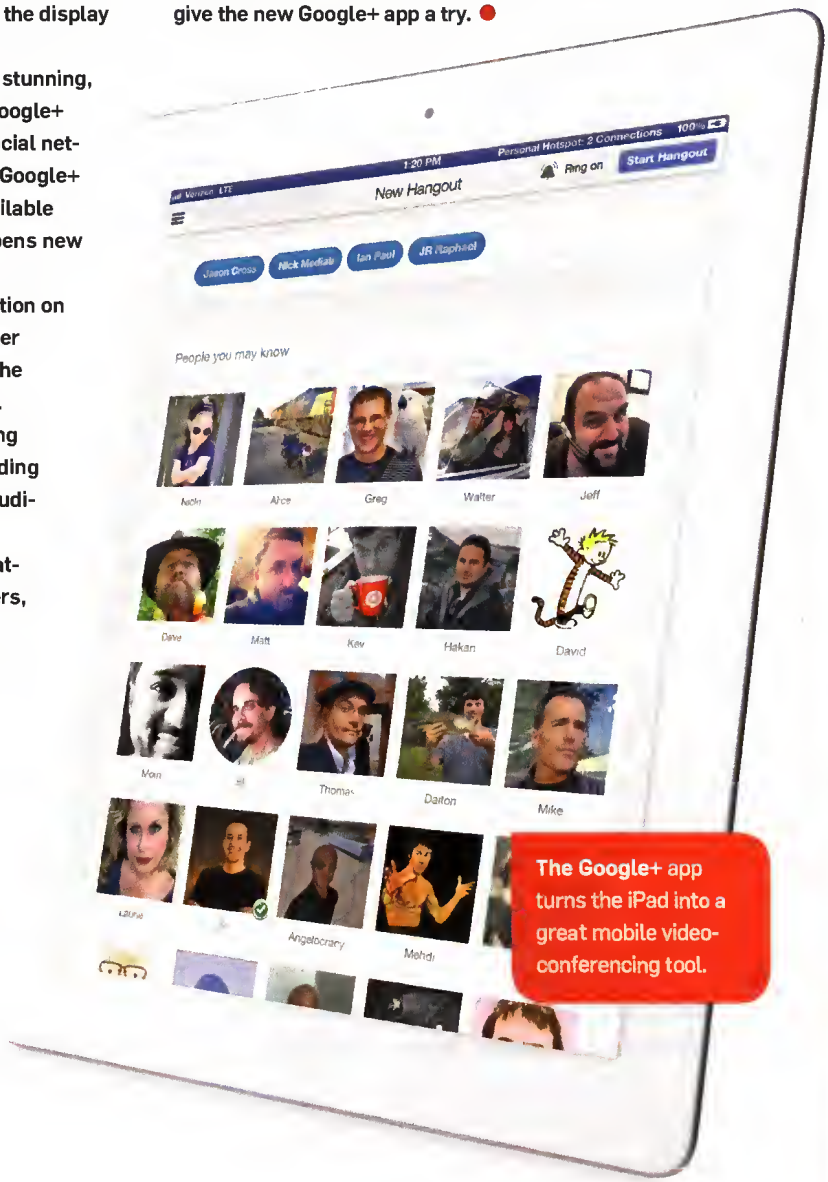
Google+ makes it easy to create Circles dedicated to specific work projects, devoted to customers, partners, or vendors, or limited to a department within the company. And you can easily start a Hangout with any Circle you've set up in your social network, or simply select the individuals you wish to engage in a video chat.

Other Videoconferencing Options

Granted, Google+ Hangouts aren't the only game in town. Business users on the go and armed with iPads could use FaceTime, but it's limited to other iOS or Mac OS X users. Skype's service enables you to video-chat with other Skype users from an iPad, and you can also turn to more-robust video-conferencing services such as FuzeMeeting, GoToMeeting, or WebEx. The drawback: Although the iPad apps for GoToMeeting and WebEx are free, the services themselves have associated costs. Besides, they tend to be more complex and cumbersome than Google+ Hangouts.

Of course, while Google+ has a solid user base, Facebook remains the biggest player in the social networking arena. As of this writing, Facebook is rumored to be working on a new version of the iPhone Facebook Messenger app that will include Skype-like video-chat functionality, but we've heard no news about an iPad version coming anytime soon.

In the meantime, for free, simple video chats on the go, Hangouts are hard to beat. If you have an iPad, you should give the new Google+ app a try. ●



The Google+ app turns the iPad into a great mobile videoconferencing tool.

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Security Alert

SpiderOak employs several means to make sure that it doesn't have access to your password or your encryption key.

Control the Keys to Your Cloud Vault

Cloud-based storage can introduce risks to the important data you store there. Here's how to secure the keys to that virtual vault.

BY GLENN FLEISHMAN

CLOUD-BASED STORAGE AND synchronization services, like Dropbox and Apple's iCloud, offer convenience for those of us who are on the go, have an Net connection, and need or want access to our data. But they also introduce significant risks.

Cloud storage accounts typically rely on a very weak link: a single password that prevents intruders from accessing your account. If someone gets hold of your password (and thus of your account), your personal data is there for the taking.

It doesn't have to be that way—you can own the keys to your virtual castle. Here's what you should know about how cloud storage services keep your data safe, and some ways to make sure that your data doesn't fall into the wrong hands.

How Most Current Systems Protect Your Data

Nearly all current Internet-based storage, backup, and sync systems use encryption keys held by the service's operator. Without the key, a viewer can't make sense of the data.

The password you set up for a service that handles all its own encryption either validates your identity or unlocks the actual encryption key, which remains in the hands of the service operator and is used solely on its servers.

If someone guesses, discovers, cracks, or resets your password, your account will be compromised. No major cloud storage or sync service uses two-factor authentication, requiring a password and another authentication credential such as an electronic card that generates a constantly changing second passcode, or an app that performs the same function.

Cloud services use various encryption keys to scramble data in transit, and to protect all the data stored on their servers. The data gets unencrypted at your end on your device.

The service must provide access to its server software to handle all of the encryption and decryption as data moves around. Further, some individuals in the company must have access to the keys, whether to update them or to deal with »

a government subpoena. Firms may routinely have third-party auditors and other experts come in and review their security procedures, but you can take additional steps to ensure that only you have access to data stored in the cloud.

Pick a Provider That Uses Unique Keys

You can use either of two effective strategies to keep all the keys to yourself. The first is to pick a sync, storage, or backup service that generates the encryption keys via software on your computer or mobile device. The second is to use your own encryption software.

SpiderOak (spideroak.com), which offers backup, sync, storage, and file sharing, derives an encryption key from the password you set. It uses your password to create a key that lives in the SpiderOak app on your phone or computer; the key is then encrypted and stored on the company's servers.

SpiderOak offers a free account level that includes all features and 2GB of storage. Paid accounts start at $10 per month or $100 per year for each 100GB.

CrashPlan (crashplan.com), which focuses on archiving and retrieving files, encrypts data before sending it. CrashPlan offers three security options. The first works similarly to many other cloud systems: The account password protects access to the encryption key stored in CrashPlan's systems, and you can reset it if you forget it. The second relies on a private password; if you forget it, you can't recover your data.

The third option permits you to set the long encryption key itself and then secure it by your own means. Of course, with this option, if you lose the key, your backed-up data is gone forever.

CrashPlan's free iOS app for remotely checking status and restoring files to an iOS device works smoothly with all three password and key options.

CrashPlan has several plans for home users and businesses. Home plans »

BUGS & FIXES

Apple, Google Update Their Browsers

Apple releases Safari 6.0; Google lets Chrome 21 loose. Plus: Mozilla tackles memory bugs and a phishing attack.

JAMES MULROY

IT'S ALL BROWSERS this month. Google released Chrome 21, patching a number of dangerous PDF-viewer-related bugs. Mozilla tackled more vulnerabilities than usual, including an interesting drag-and-drop bug, and Apple released Safari 6.0, sealing multiple potential private information leaks.

Google Chrome Turns 21

Google released a number of security updates for the Google Chrome Stable Channel. These updates affect OS X and Linux (updated to Chrome 21.0.1180.57), as well as Windows and Chrome Frame (Chrome 21.0.1180.60).

Chrome 21 includes patches that address 15 security vulnerabilities. One vulnerability was rated critical; of the others, six were rated high, five medium, and three low. Five of the weaknesses affected Chrome's built-in PDF viewer and could have caused memory corruption, a program crash, or other unexpected behavior.

Mozilla Posts Repairs

Mozilla released patches for 15 security advisories (the most in nearly two years), for Firefox, Thunderbird, and SeaMonkey. Five bugs are rated critical, four high, and six moderate.

Security researchers found a vulnerability that could enable a remote attacker to "short-circuit" a page load in Firefox via the drag-and-drop mechanism. Normally, when you drag and drop a URL into the address bar, that URL loads automatically. But the short-circuit, which is triggered by dragging and dropping a malicious address, lets hackers spoof the address bar and opens your system to phishing attacks.

This vulnerability and others are corrected in Firefox 13, 14, and ESR 10.0.6; Thunderbird 13, 14, and ESR 10.0.6; and SeaMonkey 2.11.

Apple Unveils Safari 6.0

Apple released Safari 6.0, and also patched two vulnerabilities in the company's Xcode software development tools. Safari 6.0 patches a number of security vulnerabilities. Most notably, Apple patched memory corruption issues in the WebKit that could lead to unexpected crashes or arbitrary code execution. The Safari 6.0 update is available for OS X 10.7.4 and is included in OS X 10.8 Mountain Lion.

Apple also fixed shortcomings in Xcode 4.4 that could allow an attacker to gain access to and decrypt SSL-protected data as well as "keychains"—a secure storage system for certificates, passwords, and other private data.

To learn more about all of the updates mentioned, visit go.pcworld.com/b&f10-12.

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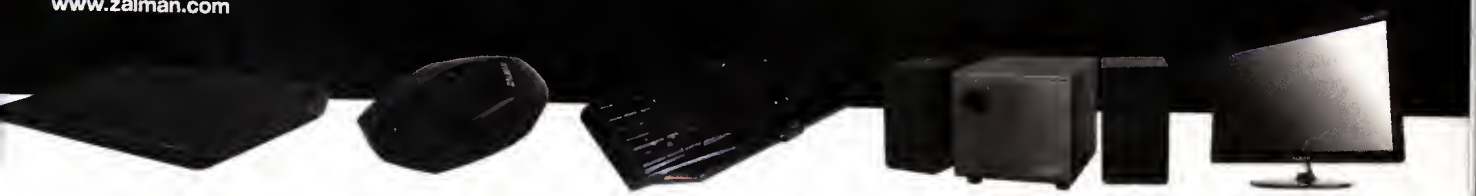

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range from $2.50 per month for a maximum of 10GB from a single machine to $12 per month for unlimited data from up to six computers, with discounts for year and multiyear purchases. Business plans start at $17.50 per month for 50GB of storage split among three PCs, and top out at $22.50 per month for unlimited storage for three computers. Discounts apply for higher numbers of computers and for yearly prepayment.

Jungle Disk (jungledisk.com; part of Rackspace) generates a key from a password you set, encrypts that key, and stores it (but not the password) on its servers. You can use Jungle Disk just to back up data, but the service also works like a network-mounted remote drive, encrypting and decrypting locally on the fly. Its free iOS app also allows remote browsing and retrieval.

Jungle Disk starts at $2 per month for personal accounts, and at $4 per month for business workgroups.

Use Encryption Software With Any Provider

The second alternative is to use software that encrypts data into bundles that work as virtual disks that you can store anywhere, including on sync and storage systems such as Dropbox. We'll discuss one option for this approach.

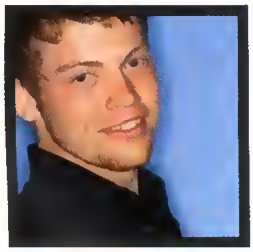
One warning: You can't have the virtual disks mounted or open in the software on multiple machines without causing sync errors or file corruption. Make sure you unmount drives before moving from one system to another.

BoxCryptor (boxcryptor.com) offers encrypted archives that you can mount as a drive; they work in much the same way as sparse-bundle disk images, but with the advantage of access via a free app for iOS and Android. A free version limits use to a single mounted volume. A $40 personal flavor can encrypt file names and create unlimited volumes, and a $60 business version is available for licensing for commercial purposes.

PRIVACY WATCH

Try Cryptocat Chat for Privacy

Keep your online chat sessions safe from prying eyes with Cryptocat, an encrypted messaging client.



ALEX WAWRO

CHATTING ONLINE WITH friends from around the world is great; worrying about whether your conversations could get you or someone else into trouble is not so great. If you want to improve your privacy while chatting online, try Cryptocat, an open-source encrypted chat client that anyone can access directly from their browser without needing to download anything to their computer.

Like many promising applications, Cryptocat was created by a university student with a good idea. In this case, the idea was to create a universally accessible encrypted instant-messaging application. Though Cryptocat has been operational for about only a year, I think it's a laudable success. Chatting with friends via Cryptocat is simple: Point your browser of choice to www.crypto.cat, choose a name for your chat session, and click the big *Enter* button to create a secure chat session. Then pick a recognizable nickname and send your friends the link to join your chat.

When you type a message and click Enter, the Cryptocat client encrypts your message with AES 256-bit encryption before the message leaves your browser, obscuring your messages against prying eyes. You can even send images and files back and forth using the same encryption standard, and since your encryption and decryption keys are stored on your PC and wiped after an hour, your Cryptocat conversations stand a pretty good chance of remaining private.

Other popular instant messaging clients (such as AOL Instant Messenger and Google Chat) employ SSL encryption to maintain user privacy. Though SSL is a strong encryption standard (which is why Google, Facebook, and many banks use it), it encrypts only information transferred between your PC and the server; when you chat via instant messaging clients that employ SSL, your messages must be decrypted on a remote server before being reencrypted and relayed, and that renders them vulnerable to snoopers.

One weakness of Cryptocat: Since you have to access the website to open a new chat, you must trust the Cryptocat server to run code in your browser, and thus you remain vulnerable to malefactors who are capable of hijacking your browsing session. To circumvent this problem, consider downloading the Cryptocat extension for Google Chrome, which lets you run all Cryptocat code on your PC, so your encryption and decryption keys remain private.

Another issue: Security researchers have found vulnerabilities in the AES algorithm. So even promising privacy applications like Cryptocat could be cracked.

Despite these drawbacks, Cryptocat is worth trying out if you want to make sure that your private chats stay that way. ●

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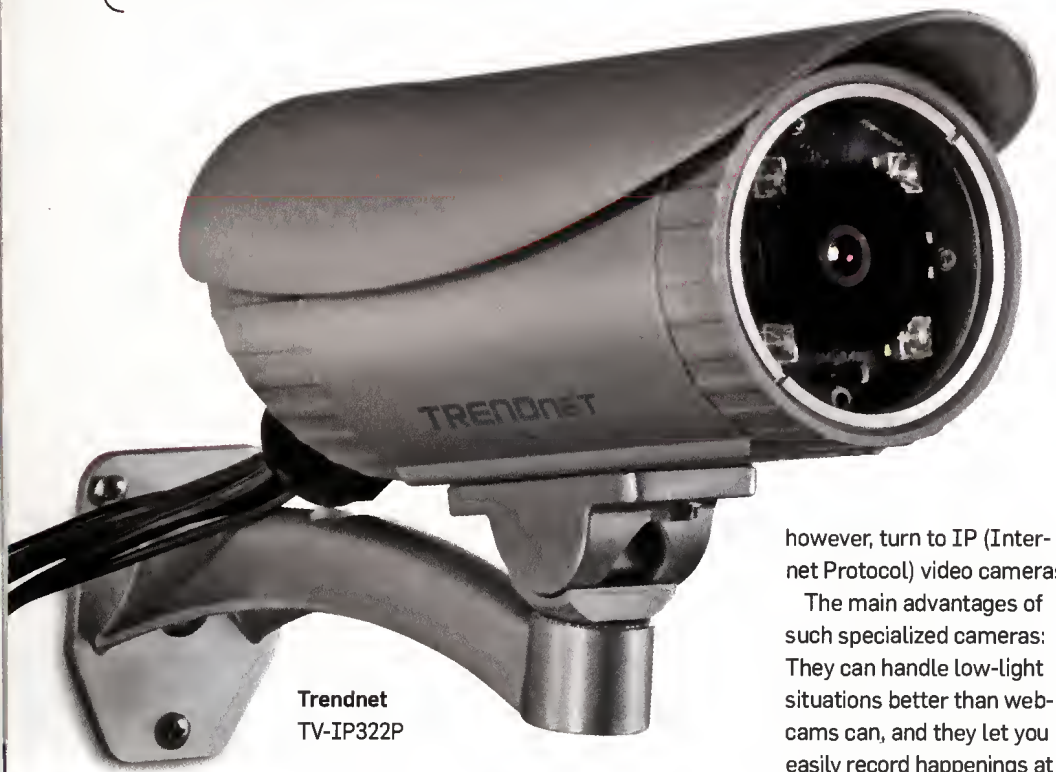
Reviews & Rankings

IP Cameras Keep Watch

Network video-surveillance cameras can help you monitor your home or office from anywhere. We tested five consumer and business models.

BY MICHAEL BROWN

WEBCAMS ARE GOOD for holding video chats. They're also great at snapping a few shots when they detect motion, and emailing the photos to you. For thorough monitoring and protection, however, turn to IP (Internet Protocol) video cameras.



Trendnet
TV-IP322P

The main advantages of such specialized cameras: They can handle low-light situations better than webcams can, and they let you easily record happenings at your home or office via your local area network and then review the video footage from wherever you may be.

Network cameras are a cost-effective crime deterrent; even if a thief ignores them, they can provide evidence that should help a law-enforcement investigation. You can add some cameras to home automation and alarm systems, too.

Better-quality models carry a two-digit IP rating (in this case, the initialism stands for "ingress protection"). The IP rating specifies the degree of protection that a camera's enclosure provides against solid objects (indicated by the first digit) and liquids (indicated by the second digit).

I tested five network cameras. I'll cover the consumer models—from D-Link, Logitech, and Trendnet—first, and then I'll discuss the business-oriented models, from Axis and Trendnet.

D-Link DCS-5222L

If you want a pan/tilt IP camera for security purposes, but you don't need top-shelf performance and design, the $250 D-Link

46 Motorola Atrix HD

51 Lenovo USB 3.0 Secure Hard Drive

57 Asus ET2701 INKI

DCS-5222L is worth a look. It offers many of the same features as the Axis M5014 business model does, at half the price. It also boasts night vision and two-way audio, which the Axis lacks.

So what do you give up in exchange? Video quality, for starters. Although the DCS-5222L offers 1280-by-720-pixel resolution, just as the Axis M5014 does, video from the D-Link looks much fuzzier. The DCS-5222L is also vulnerable to tampering, since its lens and pan/tilt mechanism are unprotected. And anyone who wants to prevent it from recording need only pull out its easily accessible MicroSD card.

D-Link's software wizard handles setup basics, but a complete configuration will have you jumping through hoops. In addition to the wizard, you need to learn the D-View local client interface, the MyDlink online interface, and (if you want to get into the camera's firmware) the Advanced Settings interface.

D-Link DCS-5222L

Trendnet TV-IP572WI

D-ViewCam lets you monitor up to 32 D-Link cameras using a local PC. MyDlink, a free companion app for PCs, smartphones, and tablets, allows you to view video streamed from your cameras over the Internet. The app has some limitations: You can view only one stream at a time, you can't resize the window any larger than 645 by 350 pixels or so, and streaming automatically times out after a few minutes.

The D-Link DCS-5222L provides a lot of features and flexibility for $250, but it stumbles on the quality of its footage. If image quality is paramount to you, check out Logitech's Alert 750e night-vision camera, which offers much better results despite a lower resolution.

Logitech Alert 750e

The most impressive feature of the $350 Logitech Alert 750e system is the quality of the camera, in terms of its video output and its physical construction. At 960 by 720 pixels and 15 frames per second, the video-capture »

PHOTOGRAPHS: ROBERT CARDIN

MORE ONLINE

For reviews of the cameras we tested for this story, see go.pcworld.com/surveillance and go.pcworld.com/ipcameras.

resolution of the Alert 750e is lower than that of competitors, but the video quality is exceptional. In addition, the camera's exterior is made from zinc, not plastic. The drawbacks are the relatively high cost and the fact that you can't install and monitor more than six cameras.

The setup I tested uses HomePlug AV powerline networking, in which electricity and ethernet data packets travel over the same cable. This arrangement means you must have an AC outlet within the vicinity of each camera, but you don't need to string cable from your router or your PC; you just insert a Logitech HomePlug AV adapter (included with each master system) into an outlet near your router. Each camera also comes with its own HomePlug AV adapter.

If your home or office has poor electrical wiring, powerline networking might deliver spotty performance or fail altogether. Logitech also sells the same outdoor and indoor cameras configured to run on Power over Ethernet.

The camera saves motion-triggered video recordings to a MicroSD card (a 2GB card is provided, but you can use cards as large as 32GB). In addition, you can set the 750e to transfer recordings to your Dropbox account.

The Logitech Alert 750e system is top-notch in nearly every respect: The camera is rugged, it produces great-quality footage, it records audio, it doesn't rely on a host PC, and it's easy to install and configure. If you don't mind the six-camera limit, you won't find a better choice.

Network cameras are a cost-effective crime deterrent. Even if a thief ignores them, cameras can provide evidence that should help a law-enforcement investigation.

INTERNET VIDEO CAMERAS FOR HOME AND BUSINESS

MODEL	Rating	Features	Specifications
CONSUMER-GRADE			
D-Link DCS-5222L **$250** go.pcworld.com/DCS-5222L	★★★½☆ VERY GOOD	• Pan, tilt • Night vision to 15 feet • Built-in mic; audio out	• 1280 by 720 resolution • H.264 video encoding • MicroSD card slot
▸ Although the DCS-5222L is a good value, the footage it provides isn't as crisp as 720p video should be.			
Logitech Alert 750e **$350** go.pcworld.com/Alert750e	★★★★½ SUPERIOR	• Night vision to 100 feet • Power over Ethernet (optional) • Built-in mic	• 960 by 720 resolution • IP68-rated enclosure • MicroSD card slot
▸ If you don't need more than six security cameras, Logitech's Alert video surveillance system is hard to beat.			
Trendnet TV-IP572WI **$170** go.pcworld.com/TV-IP572WI	★★★☆☆ GOOD	• Night vision to 25 feet • Internal antenna • Built-in mic; audio out	• 1280 by 800 resolution • H.264 video encoding • MicroSD card slot
▸ The affordable and compact TV-IP572WI is a solid day/night IP camera that offers good-quality video.			
BUSINESS-GRADE			
Axis M5014 **$595** go.pcworld.com/M5014	★★★★½ SUPERIOR	• Pan, tilt, zoom • Power over Ethernet • Only 2.2 inches high	• 1280 by 720 resolution • IP51-rated enclosure • M-JPEG and H.264 video encoding • MicroSD card slot
▸ The discreet M5014 dome camera delivers exceptional performance without drawing much attention to itself.			
Trendnet TV-IP322P **$580** go.pcworld.com/TV-IP322P	★★★★½ SUPERIOR	• AC or Power over Ethernet • Night vision to 66 feet • Ports for two-way audio	• 1280 by 1024 resolution • IP66-rated enclosure • M-JPEG, MPEG-4, and H.264 encoding • MicroSD card slot
▸ The TV-IP322P is a professional-quality camera that delivers amazing resolution and long-distance night vision.			

Trendnet TV-IP572WI

Connect the TV-IP572WI ($170) wireless day/night camera to your 802.11n network, and it will record video at a high-def resolution of 1280 by 800 pixels at 30 frames per second. The company's earlier cameras in this price range were limited to 640 by 480 pixels.

The TV-IP572WI comes with Trendnet's SecurView Pro desktop software, which can monitor up to 32 cameras. SecurView Pro supports just about any feature that any Trendnet camera offers with a button, slider, dial, or control. (And that's fine: It's better to have such overkill than to be unable to use every feature a camera has simply because the software fails to expose it.) Also available is a free SecurView Pro app for iOS and Android smartphones and tablets.

The TV-IP572WI delivers slightly better video quality than the D-Link DCS-5222L does, but its footage isn't nearly as crisp as that of the much more expensive Axis M5014. This Trendnet camera has a smaller footprint than either of those rivals; but since it's a fixed-position model, it can't cover as much area as they can. If you like this camera's feature set, and if you have a Power over Ethernet switch, you should

also look at its PoE cousin, the TV-IP572PI. It's identical to this model, except it doesn't rely on an AC outlet, and it costs $30 less.

Axis M5014

The $595 Axis M5014 pan/tilt/zoom network camera is a solid value for businesses seeking a discreet, ceiling-mounted dome camera.

Small enough to fit in the palm of your hand, it stands just 2.2 inches high. A bonus: Its IP51-rated enclosure keeps it dust-resistant and protected from dripping water, so it won't fail if your sprinklers turn on.

The M5014 uses Power over Ethernet exclusively, so you don't have to find an AC outlet to operate it. Although this design simplifies installation since you have just one cable to run, it also means that you need to obtain a Power over Ethernet switch for your network. Unlike most IP cameras, the M5014 supports both IPv4 and IPv6 to provide a degree of future-proofing during the transition between the two Internet Protocol standards.

The built-in microphone and motion detector can trigger the camera to record video, either to local storage (the camera has a MicroSD slot, but you need to provide the card) or to a shared folder on your network.

Axis uses a quarter-inch image sensor that requires just 1.4 lux of illumination to capture the action, even though the M5014 is not labeled as a day/night camera. The camera can record M-JPEG or H.264 video with a resolution of 1280 by 720 pixels at 30 frames per second.

The intentionally oversimplified Axis Camera Companion software leaves a bit to be desired, as it doesn't expose advanced camera features. Its playback window, on the other hand, is just about perfect, with a simple timeline that shows recorded events for each of the cameras it's managing.

The Axis M5014 provides especially good image quality, and its motor moves the lens around the dome quickly without generating a lot of distracting noise. This model is pricey, but its feature set, robust build quality, and extensive third-party software support more than justify the cost for business users.

Axis M5014

Logitech Alert 750e

Trendnet TV-IP322P

The $580 Trendnet TV-IP322P is optimized for use outdoors. It offers a higher resolution than most at 1280 by 1024 pixels, and it has an IP66-rated weather- and vandal-proof enclosure that keeps dust and high-pressure water from getting inside.

This camera can operate on Power over Ethernet, so you don't need to install the unit next to an electrical outlet. Operating by PoE isn't a requirement, however, since Trendnet considerately supplies an AC adapter too.

The TV-IP322P has strong night-vision capabilities, working at distances of up to 66 feet. Its comprehensive features include two-way audio with ports for an external mic and speaker, as well as general-purpose input/output ports for integration into an alarm system. The camera can generate SMS and email alerts, and it can stream video to a smartphone or tablet in real time without requiring a host PC. Equipped with a MicroSD card slot, it can handle cards as large as 32GB.

As noted earlier, Trendnet's powerful SecurView Pro software for the PC can support as many as 32 Trendnet cameras; the company also offers a mobile version for Android and iOS. Even better: Trendnet has designed its cameras so that you can mix and match this more expensive outdoor camera with other, less pricey models in the line.

Motorola Atrix HD: An Excellent Deal

THE MOTOROLA ATRIX HD ($100 with a two-year AT&T contract) is the first Android phone Motorola has released as a Google subsidiary.

It measures 5.26 inches tall by 2.75 inches wide; at only 0.43 inch thick, it fits easily into a pocket or handbag. It comes in either black or white. Instead of physical buttons, you get three "virtual" buttons, for Back, Home, and Recent Apps.

The phone's name comes from its screen, a 4.5-inch, 720-by-1280-pixel "HD" display. In sharpness and clarity of detail, the Atrix HD held its own against the Galaxy S III and the iPhone 4S. Text was easy to read.

This Motorola phone runs on Android 4.0 (Ice Cream Sandwich), with a Motorola-made overlay.

It's the first Motorola phone on AT&T to ship with SmartActions, an app that can help you conserve battery life through reminders you set. Battery life wasn't the best: I had to recharge it after about 5 hours of moderate to heavy use.

A 1.5GHz dual-core Qualcomm Snapdragon processor powers the Atrix HD; other phones with this processor have achieved high scores in our benchmarks.

Call quality in San Francisco over AT&T's network was very good, as were the 4G LTE data speeds. Camera quality was disappointing.

The Atrix HD is mostly an excellent deal. It shows that these days, "budget" doesn't have to be synonymous with "inferior." *—Ginny Mies*

★★★½; $100 with two-year contract; Motorola; go.pcworld.com/atrixhd

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LG Optimus 4X HD: A Quad-Core Android Phone

LAB TESTED

THE LG OPTIMUS 4X HD ($560 unlocked) is LG's first quad-core model. Powered by an Nvidia Tegra 3 processor, it also has a 4.7-inch display with a 1280-by-720-pixel resolution. The Optimus 4X HD is available in Europe, but so far LG hasn't announced any plans for North America.

Superthin at 0.35 inch thick, the 4X HD has what LG calls a "True HD IPS" display. Blacks look deep, colors are vivid, and whites seem bright. The screen suffers from oversaturation, though. Details usually were quite sharp in photos, but text rendering wasn't perfect.

Nvidia's Tegra 3 processor actually has a smaller fifth core to help phones conserve battery life, handling less-demanding tasks such as active standby.

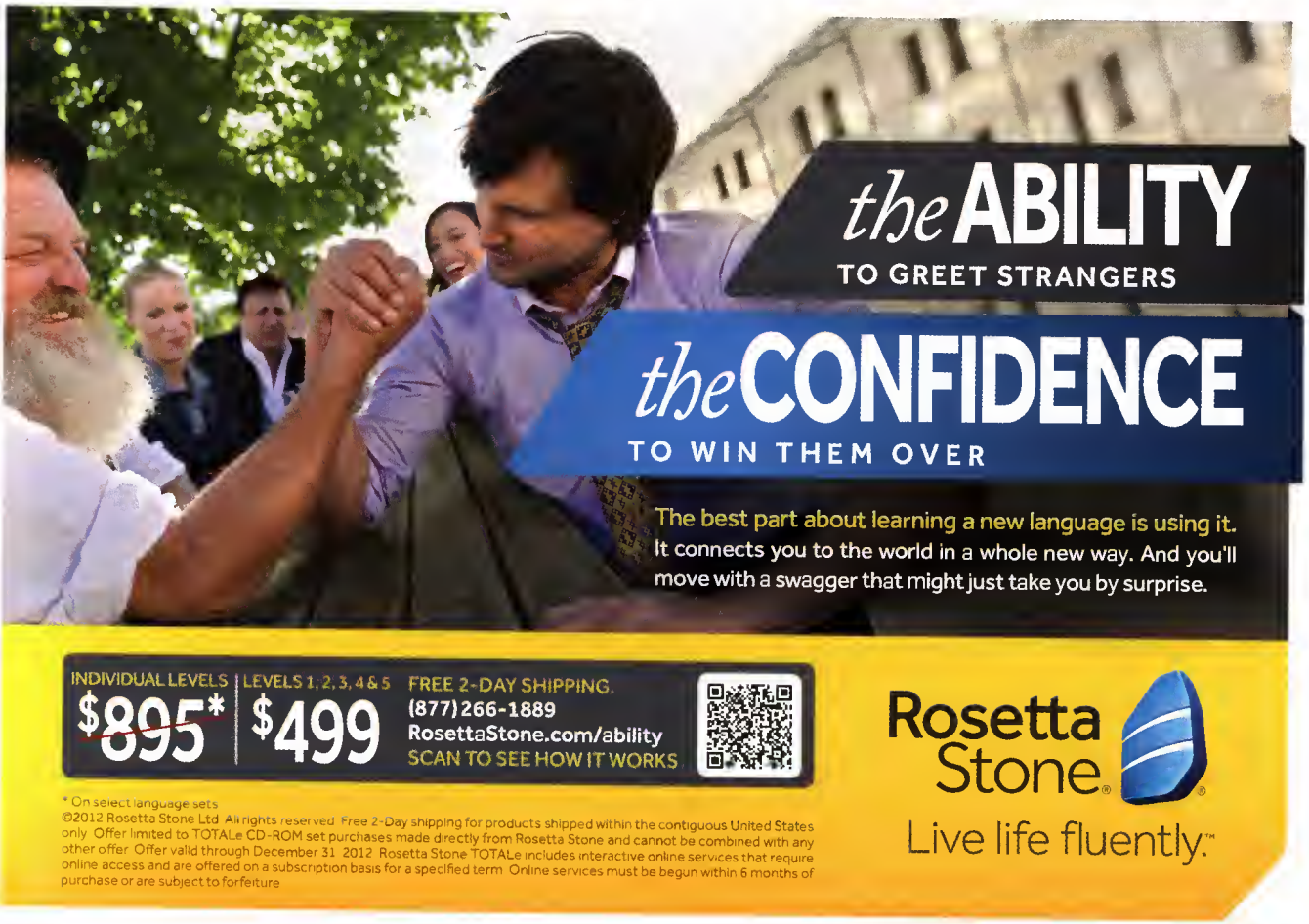
On some benchmarks, the 4X HD outperformed rivals like the Samsung Galaxy S III. And its quad-core power becomes abundantly clear in gaming: Graphics-heavy games on the 4X HD played smoothly and looked terrific.

After two passes in our tests, the Optimus 4X had an average battery life of 6 hours, 28 minutes. It runs the Android Ice Cream Sandwich operating system with an LG-branded user interface.

It also comes with built-in NFC (near-field communications) for mobile payments.

Overall, the LG Optimus 4X HD has what it takes to compete with other top-of-the-line Android phones, and I hope that LG brings a version to the United States. *—Ginny Mies*

★★★★½; $560 unlocked; LG; go.pcworld.com/optimus4x



Top 10 All-Purpose Laptops

LAB TESTED

	MODEL	Rating	Performance	Features and specifications
1	BEST BUY **Dell XPS 14z** **$1199** go.pcworld.com/dellxps14z	★★★★☆ VERY GOOD	• WorldBench 6 score: 136 • WorldBench 6 rating: Superior • Overall design: Very Good • Tested battery life: 5:29	• 2.8GHz Core i7-2640M • 14.0-inch widescreen • 4.4 pounds • 750GB hard drive
	▸ Dell's XPS 14z offers a balanced approach to thin-and-light, full-featured laptops, but it has only two USB ports.			
2	**Asus U46SV** **$899** go.pcworld.com/asusu46sv	★★★★☆ VERY GOOD	• WorldBench 6 score: 123 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 6:41	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.9 pounds • 750GB hard drive
	▸ Stylish laptop has great stats and numbers, but it's heavy, and you must clean out the software bloat to appreciate it fully.			
3	**Lenovo ThinkPad T420** **$1249** go.pcworld.com/lenovoT420	★★★★☆ VERY GOOD	• WorldBench 6 score: 124 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 8:37	• 2.5GHz Core i5-2520M • 14.0-inch widescreen • 5.2 pounds • 500GB hard drive
	▸ The venerable ThinkPad T420's staid countenance belies its outstanding performance, reliability, and features.			
4	**MSI X460DX** **$949** go.pcworld.com/msix460dx	★★★★☆ VERY GOOD	• WorldBench 6 score: 120 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 6:04	• 2.3GHz Core i5-2410M • 14.0-inch widescreen • 4.5 pounds • 500GB hard drive
	▸ The X460DX is a slim yet powerful all-purpose laptop that MSI makes available at a decent price.			
5	**Acer Aspire Timeline Ultra M5-581T-6666** **$929 NEW** go.pcworld.com/acertimelinem5	★★★★☆ VERY GOOD	• WorldBench 7 score: 104 • WorldBench 7 rating: Good • Overall design: Very Good • Tested battery life: 7:24	• 1.7GHz Core i5-3317U • 15.6-inch widescreen • 4.8 pounds • Nvidia GT 640M discrete graphics
	▸ The Aspire Timeline Ultra M5-581T-6666 could have been a MacBook killer, if not for its poor LCO panel.			
6	**HP Pavilion dm4 Beats Edition** **$1149** go.pcworld.com/hppavilliondm4	★★★★☆ VERY GOOD	• WorldBench 6 score: 120 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 5:23	• 2.5GHz Core i5-2450M • 14.0-inch widescreen • 4.5 pounds • 500GB hard drive
	▸ Though it can't deliver high-end graphics, the Pavilion dm4 Beats Edition has great design and sound at a good starting price.			
7	**Samsung Series 7 Chronos** **$1099** go.pcworld.com/series7chronos	★★★½☆ VERY GOOD	• WorldBench 6 score: 118 • WorldBench 6 rating: Good • Overall design: Very Good • Tested battery life: 5:54	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.6 pounds • 750GB hybrid hard drive
	▸ The Series 7 Chronos may be the perfect laptop for Windows users who lust after MacBook Pros.			
8	**Lenovo IdeaPad U400** **$940** go.pcworld.com/lenovoU400	★★★½☆ VERY GOOD	• WorldBench 6 score: 112 • WorldBench 6 rating: Very Good • Overall design: Very Good • Tested battery life: 4:45	• 2.4GHz Core i5-2430M • 14.0-inch widescreen • 4.3 pounds • 750GB hard drive
	▸ You won't find a more stylish or capable all-purpose laptop, though this IdeaPad sorely needs a Blu-ray option.			
9	**Dell XPS 14** **$1499 NEW** go.pcworld.com/dellxps14	★★★½☆ VERY GOOD	• WorldBench 7 score: 111 • WorldBench 7 rating: Good • Overall design: Very Good • Tested battery life: 7:37	• 1.9GHz Core i7-3517U • 14.0-inch widescreen • 4.6 pounds • Discrete Nvidia GT 630M GPU
	▸ The Dell XPS 14 excels at multimedia, boasts great battery life, and performs decently—but it's heavy and a bit pricey.			
10	**Sony VAIO E15** **$699 NEW** go.pcworld.com/sonyvaioe15	★★★½☆ VERY GOOD	• WorldBench 7 score: 87 • WorldBench 7 rating: Very Good • Overall design: Good • Tested battery life: 4:15	• 2.5GHz Core i5-3210M • 15.5-inch widescreen • 5.4 pounds • 750GB hard drive
	▸ Sony's distinctive sense of style raises this otherwise ordinary mainstream laptop above the crowd.			

CHART NOTES: Ratings are as of 6/5/12. Tested battery life is expressed in hours:minutes. Listed weights do not include the power adapter.

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Asus TF700: A Powerful, Stylish Android Tablet

LAB TESTED

ASUS DELIVERS a complete package with the Transformer Pad Infinity TF700 Android tablet. It maintains the slim, stylish, multipurpose tradition of its predecessor, the Transformer Prime, but adds an improved Nvidia Tegra 3 processor and a 1920-by-1200-pixel display. Except in battery life, it's the best-performing Android tablet we've seen to date.

The 32GB version of the Infinity also offers double the memory of the third-generation 16GB Apple iPad, at the same price, $499. The 64GB version of the Infinity costs $599, or $100 less than the 64GB iPad.

At 10.4 by 7.1 by 0.3 inches and 1.31 pounds, the Infinity is one of the lightest and slimmest Android tablets. Apple's iPad measures 9.5 by 7.3 by 0.4 inches, and weighs 1.44 pounds. I found the Infinity more comfortable to hold than the iPad.

The Transformer TF700 fits nicely into its optional keyboard dock, and folds up like a netbook.

High-Res Display

The high-resolution, 10.1-inch display dramatically improves the overall tablet experience. Text is clearer, images are sharper, and everything on the screen pops. The Infinity's pixel density of 224 pixels per inch matches that of the Iconia Tab A700. The iPad's 2048-by-1536-pixel resolution delivers 264 pixels per inch, but the difference in screen quality between the iPad and the two Android tablets was not overwhelmingly obvious.

Test images looked great, too—sharper and clearer, with better color reproduction than on 1280-by-800-pixel tablets. Admittedly, the Infinity's images did look overly vivid—likely because of the brighter display. But the Infinity clearly topped the Prime in contrast and clarity.

The glass panel is made of Corning Gorilla Glass 2, but lacks optical bonding, which can minimize glare and improve image clarity.

The Infinity comes loaded with Android 4.03 Ice Cream Sandwich, 1GB of DDR3 memory operating at 1600MHz (an improvement over the type of memory used on the Prime), and a quad-core 1.6GHz Nvidia Tegra 3 T33 processor.

Top Performance

Among Android tablets, the Infinity roared past almost all comers in our tests. It outperformed other Tegra 3–based models running at a slower clock speed to grab the crown as top performer.

The high-resolution display saps battery life faster; in our tests, the Infinity's battery lasted 7 hours, 58 minutes, versus the Prime's 8 hours, 22 minutes and the iPad's 10 hours, 46 minutes. But it was superfast at recharging, requiring just 2 hours, 32 minutes.

Like the Prime, the Infinity has a rear 8-megapixel camera, but it has a slightly wider aperture for low-light shooting. I preferred the Infinity's images; its color and clarity were better than the Prime's. Also, the front-facing camera now has 2 megapixels, for high-definition video chat.

The Infinity supports Bluetooth 3.0. Ports include a Micro-HDMI output, a MicroSD card reader, and a proprietary connector to use with the charger/USB transfer cable or the optional keyboard dock. Like other models in Asus's Transformer series, the Infinity morphs into a clamshell-style netbook when you snap the tablet into its $150 Mobile Dock.

I encountered some odd behavior when transferring media to the Infinity from my Windows 7 PC, such as error messages; and several apps, including the browser and the camera, closed unexpectedly.

Still, the Asus Transformer Pad Infinity TF700 takes over from its predecessor as the top Android tablet available.

—Melisso Perenson

★★★½☆; $499 (32GB), $599 (64GB); Asus; go.pcworld.com/asusTF700

Lenovo's Affordable USB 3.0 Secure Hard Drive

IF HAVING TO pay $7+ per gigabyte for secure flash drives makes you blanch, consider the Lenovo ThinkPad USB 3.0 Secure Hard Drive. At $200 for 750GB—or about 27 cents per gigabyte—it's a lot more affordable than secure flash drives. Plus, the 2.5-inch device is faster than USB flash drives. The drive is sealed against intrusion and occupies a lightly ruggedized chassis. It uses 256-bit AES encryption integrated into the drive controller, and is software-free; you unlock your data by using a keypad on the top of the unit; this is faster and more convenient than waiting for software to launch, and it makes the unit compatible with any operating system or device.

The drive's security system provides an administrative PIN and ten user PINs. Eight digits are required for all PINS. Accessing the drive is as simple as pressing the green unlock button and entering your PIN.

The Lenovo Secure Hard Drive was a good performer in *PCWorld*'s tests, writing a 10GB mix of small files and folders at 39.4 MBps and reading the same mix at 64.3 MBps. With a single large file, speeds were 89.2 MBps and 99.7 MBps, respectively.

If you don't need the tiny size of a USB flash drive, the Lenovo Secure Hard Drive offers a much better deal.

—Jon L. Jacobi

★★★½☆; $200; Lenovo; go.pcworld.com/securehd

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Iomega's Budget NAS

THE IOMEGA STORCENTER ix2-dl is the company's least expensive two-bay NAS box, and a notable step up from its more consumer-oriented Home Media Hard Drive. At $200 sans disks, it's a good performer for reading back data, and its software features are solid. But the ix2-dl's small file and folder write performance is weak.

The StorCenter ix2-dl is powered by a 1.6GHz Marvell 3282 CPU and 256MB of memory. A basic black box, the ix2-dl is adorned only with power and status lights on the front panel, and gigabit ethernet and a single USB 2.0 port on the back. That port works with external storage drives or printers; or you can plug in a USB camera and use the drive for video surveillance.

The ix2-dl provides interfaces to social sites such as Facebook, Flickr, and YouTube; DLNA and iTunes media serving; and iSCSI and printer serving, among other capabilities.

Writing lots of smaller files and folders is the ix2-dl's weakness. With our 10GB mix of files, it wrote at 20.2MBps. Though that's not the worst speed we've seen, it's close.

For the average home or SOHO user, the ix2-dl is easy to configure and use, and it doesn't cost a fortune.

—Jon L. Jocobi

★★★½☆; $200; Iomega; go.pcworld.com/ix2nas

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Top 10 Color Laser Printers

LAB TESTED

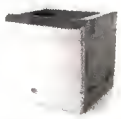
	MODEL	Rating	Performance	Features and specifications[1]
1	Dell 5130cdn $1549 go.pcworld.com/dell5130cdn	★★★★½ SUPERIOR	• Text quality: Superior • Photo quality: Very Good • Tested speeds: 25.2 ppm text/ 8.3 ppm graphics	• USB, ethernet connectivity • 700-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 0.8 cent black, 6.9 cents for all four colors
	▸ Everything a busy office needs is here: speed, great print quality, and features galore—plus supercheap toner.			
2	Lexmark C748de $1199 NEW go.pcworld.com/ lexmarkc748de	★★★★☆ VERY GOOD	• Text quality: Superior • Photo quality: Superior • Tested speeds: 18.7 ppm text/ 3.4 ppm graphics	• USB, ethernet connectivity • 650-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.6 cents black, 9.2 cents for all four colors
	▸ Outstanding speed and output quality highlight this high-capacity, 1200-dpi color laser printer from Lexmark.			
3	 Lexmark C792de $1599 go.pcworld.com/ lexmarkc792de	★★★★☆ VERY GOOD	• Text quality: Superior • Photo quality: Very Good • Tested speeds: 22.7 ppm text/ 2.9 ppm graphics	• USB, ethernet connectivity • 650-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.5 cents black, 9.2 cents for all four colors
	▸ You could print tons of content on this fast, capable laser printer—but the toner costs are a bit higher than the competition's.			
4	HP Color Laserjet CP4025dn $1299 go.pcworld.com/hpcp4025dn	★★★★☆ VERY GOOD	• Text quality: Superior • Photo quality: Very Good • Tested speeds: 19.4 ppm text/ 6.2 ppm graphics	• USB, ethernet connectivity • 600-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.9 cents black, 9.7 cents for all four colors
	▸ This workgroup printer has plenty of speed and features, and its toner is cheap. Photos tend to look dark, though.			
5	BEST BUY Dell C3760dn $649 NEW go.pcworld.com/dellc3760dn	★★★½☆ VERY GOOD	• Text quality: Superior • Photo quality: Very Good • Tested speeds: 20.1 ppm text/ 3.8 ppm graphics	• USB, ethernet connectivity • 700-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.5 cents black, 13.1 cents for all four colors
	▸ For workgroups, this printer offers speed and good-looking output, plus low-cost black toner, in a no-nonsense package.			
6	Samsung CLP-775ND $750 go.pcworld.com/ samsungclp775nd	★★★½☆ VERY GOOD	• Text quality: Very Good • Photo quality: Good • Tested speeds: 18.1 ppm text/ 3.9 ppm graphics	• USB, ethernet connectivity • 600-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.8 cents black, 9.6 cents for all four colors
	▸ Efficient speed, good paper handling, and reasonably priced toner are this workgroup model's strengths. Photo quality is adequate.			
7	Oki C330dn $400 go.pcworld.com/oki_c330dn	★★★☆☆ GOOD	• Text quality: Very Good • Photo quality: Fair • Tested speeds: 15.2 ppm text/ 2.7 ppm graphics	• USB, ethernet connectivity • 350-sheet standard input • Lowest vendor-specified toner cost per page: 2.8 cents black, 17.4 cents for all four colors
	▸ This low-priced workgroup model balances good speed and features with merely tolerable color quality and toner costs.			
8	Brother HL-4570CDW $500 go.pcworld.com/ brotherHL-4570cdw	★★★☆☆ GOOD	• Text quality: Superior • Photo quality: Good • Tested speeds: 16 ppm text/ 3.2 ppm graphics	• USB, ethernet, wireless connectivity • 300-sheet standard input, automatic duplexing • Averaged cost per page, per editorial research: 1.8 cents black, 11.7 cents for all four colors
	▸ Competitive in speed and features, but not in photo quality, this small-business workhorse laser printer is best for mainstream use.			
9	Dell 2150cdn $400 go.pcworld.com/dell2150cdn	★★★☆☆ GOOD	• Text quality: Superior • Photo quality: Very Good • Tested speeds: 15.1 ppm text/ 1.7 ppm graphics	• USB, ethernet connectivity • 250-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 3.3 cents black, 15.2 cents all four colors
	▸ A low price tag and good performance make this Dell printer appealing; its standard-size toner, however, is pricey.			
10	Xerox ColorQube 8570DN $899 go.pcworld.com/xeroxB570dn	★★★☆☆ GOOD	• Text quality: Very Good • Photo quality: Fair • Tested speeds: 14.8 ppm text/ 2.6 ppm graphics	• USB, ethernet connectivity • 625-sheet standard input, automatic duplexing • Lowest vendor-specified toner cost per page: 1.7 cents black, 12.5 cents for all four colors
	▸ The easy-to-use solid-ink consumables are a selling point, but the grainy color quality of photos is disappointing.			

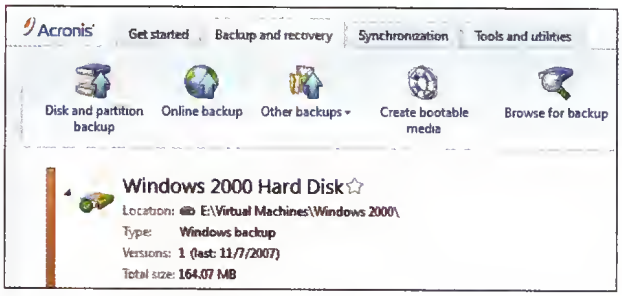
CHART NOTES: Ratings are as of 8/8/12. Toner costs are per page; ppm = pages per minute.

MORE ONLINE Visit go.pcworld.com/clp to see in-depth reviews, full test results, and detailed specs for each printer on this chart.

Acronis True Image Home Offers Friendly Backup

ACRONIS TRUE IMAGE Home 2012 supports imaging, file backup, online backup, synchronization (local, online, and remote) and even continuous backup. And the user interface is well organized and well thought out.

True Image Home 2012 includes Secure Zone, a hidden partition for restoring your PC without using boot media; a boot manager that adds images to the boot sequence if you're using Windows 7 Enterprise or Ultimate; a driver for greater than 2.2TB support in Windows XP; a file shredder, a disk wiper; and a CCleaner-like system cleanup utility.



True Image Home 2012's interface is colorful and easy to use.

True Image Home 2012 lacks support for Microsoft's dynamic disks (which won't affect most home users) and restoration to dissimilar hardware. Acronis's $30 Plus Pack offers both features.

All of True Image Home 2012's local functionality worked quite well for me, though enumerating devices on the network proceeded glacially at times.

Perhaps the best new True Image Home 2012 feature is the ability to synchronize data between local drives, the Acronis online service, and remote network locations. If you work with the same data on different machines and from remote locations, this capability can be incredibly handy. The online backup service is priced at $5 a month, or $50 a year for 250GB. *—Jon L. Jocobi*

★★★★½; $50; Acronis; go.pcworld.com/trueimage2012

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Android App Guide

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NTI's Single-Minded Drive-Cloning Utility

NTI ECHO 3 is a simple and effective utility for cloning hard drives and partitions.

Echo 3 can copy data from a single partition, from an entire drive, and from both while filtering out file types you define. You can also have the program dynamically resize partitions to fit a new drive. If a partition took up 33 percent of a 250GB drive, for instance, you can have it take up the same percentage of a 500GB drive.

I do have two minor complaints. First, although Echo 3 warns you that it will overwrite any data on the destination drive, the warning comes only after you've chosen a disk from a drop-down list. Best practice would be to show the drives and detail exactly what's on them. Second, Echo 3 performs cloning during a reboot, instead of from within Windows.

Echo 3 is handy, but you can clone your drive (in more steps) with Windows Vista/7 Backup and the Windows boot disk. Also, a number of more-expensive programs—Acronis True Image Home 2012 ($50), Paragon Hard Disk Manager Professional 2012 ($100), and R-Drive Image ($45)—do cloning and a lot more. *—Jon L. Jacobi*

★★★½☆; $20; NTI; go.pcworld.com/ntiecho3

NTI Echo 3's interface steps you through the cloning operation.

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Top 10 Budget Desktop PCs

LAB TESTED

	MODEL	Rating	Performance	Features and specifications
1	**Alienware X51** **$959** go.pcworld.com/alienwarex51	★★★★½ SUPERIOR	• WorldBench 6 score: 157 • WorldBench 6 rating: Very Good • Design: Superior • Graphics: Good	• 3GHz Intel Core i5-2320 • 8GB DDR3 • Nvidia GeForce GTX 555 • 1TB HDD
	▸ The Alienware X51 proves that big things can come in small packages, offering excellent gaming performance in a slim chassis.			
2	BEST BUY **MicroExpress MicroFlex 37B** **$1299 NEW** go.pcworld.com/microflex37b	★★★★½ SUPERIOR	• WorldBench 7 score: 172 • WorldBench 7 rating: Superior • Design: Very Good • Graphics: Good	• 3.5GHz Intel Core i7-377DK • 16GB DDR3-16DD • AMD Radeon HD 7B5D • 12DGB SSD plus 1TB HDD; Blu-ray
	▸ Raw speeds and a generous array of desirable features make the MicroFlex 37B an outstanding inexpensive desktop.			
3	**Origin Chronos** **$1388** go.pcworld.com /originchronos	★★★★ VERY GOOD	• WorldBench 6 score: 204 • WorldBench 6 rating: Superior • Design: Good • Graphics: Very Good	• 4.7GHz Intel Core i5-255DK • 8GB DDR3 • Nvidia GeForce GTX 56D Ti • 90GB SSD plus 75DGB HDD
	▸ The low-profile, high-performance Chronos, though at the upper end of the budget-desktop price range, is extraordinarily fast for its class.			
4	**HP Pavilion H9-1120t** **$1150 NEW** go.pcworld.com/pavilionh91120t	★★★★ VERY GOOD	• WorldBench 7 score: 121 • WorldBench 7 rating: Very Good • Design: Good • Graphics: Very Good	• 3.5GHz Intel Core i7-377DK • 12GB DDR3-1333 • AMD Radeon HD 795D • 2TB HDD
	▸ This budget system from HP packs lots of high-end features, including four USB 3.0 ports and a Blu-ray Disc drive.			
5	**Asus Essentio CM6870** **$888** go.pcworld.com/asuscm6870	★★★½ VERY GOOD	• WorldBench 7 score: 107 • WorldBench 7 rating: Very Good • Design: Good • Graphics: Good	• 3.4GHz Intel Core i7-377D • 8GB DDR3-16DD • 2TB HDD
	▸ The Essentio CM687D is reasonably fast and has a moderately low price, but it would have benefited from more polish.			
6	**Acer Aspire AM3970-U5022** **$500** go.pcworld.com/aceram397Du5D22	★★★½ VERY GOOD	• WorldBench 6 score: 131 • WorldBench 6 rating: Good • Design: Good • Graphics: Fair	• 3.1GHz Intel Core i3-21DD • 6GB DDR3 • 1TB HDD
	▸ The peppy Aspire AM397D-U5D22 is among the lowest-priced Sandy Bridge offerings you can buy, but it offers few extras.			
7	**Lenovo H330** **$800** go.pcworld.com/lenovoh330	★★★ GOOD	• WorldBench 6 score: 158 • WorldBench 6 rating: Very Good • Design: Good • Graphics: Good	• 3.3GHz Intel Core i5-25DD • 8GB DDR3 • 1TB HDD
	▸ The H33D packs impressive specs for an $800 desktop: a Core i5 processor, 1TB of hard-drive space, and a Blu-ray Disc drive.			
8	**iBuyPower Gamer Paladin** **$999** go.pcworld.com/ibpgamerpaladin	★★★ GOOD	• WorldBench 6 score: 161 • WorldBench 6 rating: Very Good • Design: Good • Graphics: Very Good	• 3.3GHz Intel Core i5-25DDK • 8GB DDR3-16DD • Nvidia GeForce GTX 570 • 1TB HDD
	▸ We love this powerful desktop's speed, but its omission of a Blu-ray Disc player leaves multimedia buffs in the cold.			
9	**Lenovo ThinkCentre M92P** **$580 NEW** go.pcworld.com/lenovom92p	★★★ GOOD	• WorldBench 7 score: 95 • WorldBench 7 rating: Good • Design: Very Good • Graphics: Good	• 2.9GHz Intel Core-i5 347DT • 4GB DDR3 • 5DDGB HDD
	▸ The ThinkCentre M92P is an energy-efficient PC in a tiny package, but it can't decide whether it's an office system or a multimedia machine.			
10	**HP Pavilion Slimline s5-1060** **$830** go.pcworld.com/pavilions51D60	★★★ GOOD	• WorldBench 6 score: 145 • WorldBench 6 rating: Good • Design: Superior • Graphics: Good	• 2.9GHz Intel Core i5-231D • 6GB DDR3 • AMD Radeon HD 6450 • 1TB HDD
	▸ This slim tower model boasts solid computing and a few fancy features, such as a Blu-ray Disc player, that boost its appeal.			

CHART NOTES: Ratings are as of 7/31/12. HDD = hard-disk drive; SSD = solid-state drive.

MORE ONLINE Visit go.pcworld.com/budgetpcs to see in-depth reviews, full test results, and detailed specs for each PC on this chart.

Asus ET2701 INKI: A Multipurpose All-in-One

LAB TESTED

PRICED AT $1299, Asus's 27-inch, high-definition all-in-one PC carries a Core i7-3770S CPU that runs at a 3.1GHz base speed, with Intel Turbo Boost technology increasing it to 3.9GHz when needed. The 8GB of DDR3-SDRAM makes apps open quickly. You also get a discrete Nvidia GeForce GT 640M GPU (with 1GB of video memory) and a Blu-ray drive.

The ET2701 INKI earned a mark of 111 on our strenuous WorldBench 7 test suite.

Though the 1920-by-1080-pixel screen is large and crisp, it lacks touch support. On-screen images look good from most angles, but the LCD is very reflective when viewed under direct light.

The system comes with a single 7200-rpm, 2TB hard drive split into two partitions: a small one for the Windows 7 Home Premium operating system and a few programs, and a second partition labeled as a data drive.

Connections include gigabit ethernet, Bluetooth, and wireless 802.11n. The system has a total of five USB ports: two USB 3.0 ports and an eSATA/USB 2.0 one on the side, plus two USB 2.0 ports on the back. An SD Card reader, VGA input, antenna, and HDMI-in round out the port offerings. If you are a media maven who is inclined to consider touchscreens to be an unnecessary gimmick, this Asus all-in-one PC may be a great fit. *—Alex Cocilovo*

★★★☆☆; $1299; Asus; go.pcworld.com/asuset2701

HP Omni 27-1015t: Beautiful, Affordable, Boring

LAB TESTED

THE $1549 HP Omni 27-1015t is a glossy 27-inch all-in-one that could almost pass as an HDTV. It has a high-definition resolution of 1920 by 1080 pixels, but lacks touch support.

The PC's Core i5-3550S CPU—a low-power version of Intel's new Ivy Bridge processor—runs at 3.0GHz normally, but it can accelerate to 3.7GHz thanks to Intel's Turbo Boost. On our WorldBench 7 tests, it earned an impressive mark of 115.

The Omni 27-1015t comes with a discrete AMD Radeon HD 6550A graphics card and a 7200-rpm, 2TB hard drive. Other standard features include a built-in webcam, an integrated microphone, Beats Audio technology, a wireless mouse and keyboard that connect via Bluetooth, and plenty of ports: four USB 2.0 ports on the back and two USB 3.0 ports on the side. The PC also sports a comprehensive SD Card reader to maximize its media capabilities.

The standout feature of the Omni 27-1015t is the HDMI input on the side, which makes plugging in a game console or media player easy. A button above the HDMI port lets you switch the PC into 'Game Mode': One press, and you instantly have a beautiful 27-inch display to play on.

Overall, the HP Omni 27-1015t is a solid, beautiful media center with a bit more power than you can find in the typical all-in-one system. It fails to be unique, however. On this machine, HP has played it safe, providing adequate features and straddling the line between affordable and overpriced. In the end, however, this model doesn't really stand out. *—Alex Cocilovo*

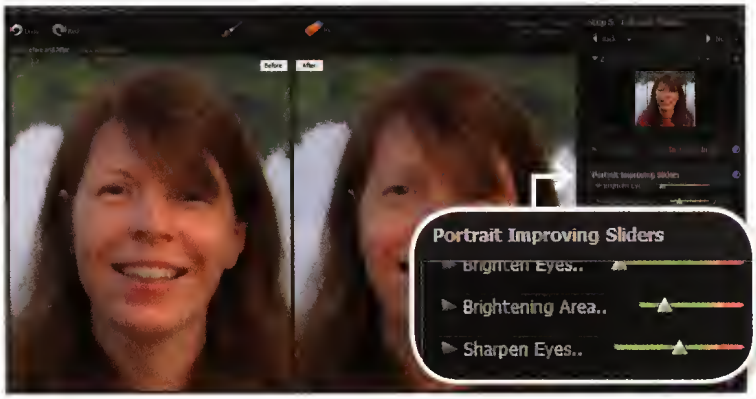
★★★☆☆; $1549; HP; go.pcworld.com/omni271015t

PHOTOGRAPHS: ROBERT CARDIN

Portrait Professional 10 Lets You Fine-Tune Faces

VERSION 10 OF Anthropics' Portrait Professional includes a few nice changes to the interface and controls, but it continues to provide a good platform for improving photo subjects' attractiveness.

Like Portrait Professional version 9, version 10 lets you create minimal to sweeping changes to a face to make it more appealing. Once you upload an image, you mark five spots on it—outside corners of the eyes, tip of the nose, and corners of the mouth. Then you adjust the points on the image to correspond to the features of the face, and click. In seconds, the software changes the face's features in accordance with predetermined beautifying algorithms. The result: a new face.



Portrait Professional's sliders let you adjust various enhancements as you like.

After Portrait Professional is finished, you can make changes using the sliders at the right side of the screen to fine-tune each effect. Version 10 introduces the option of identifying a subject as a child and using a special set of controls for correcting the image.

Anthropics also offers better algorithms for different ages and textures of skin. I tested the sliders on a wide range of people, including a man in his 70s, a man in his 40s, a woman in her 40s, and a child. The program did a good job of subtly improving each person's skin and facial structure, yielding a more attractive look without going too far toward an airbrushed result. *—Lisa Cekan*

★★★½☆; $90; Anthropics; go.pcworld.com/portraitpro10

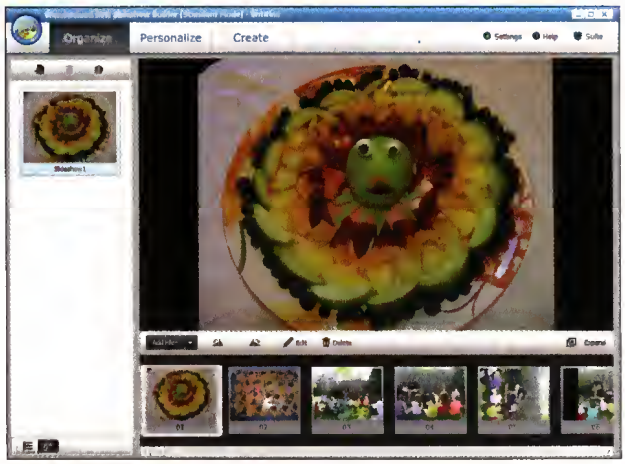
Wondershare's Advanced DVD Slideshow Builder

DVD SLIDESHOW Builder Deluxe helps you build slideshows that you can burn to DVDs for playing back on a TV. In addition, you can save the slideshows as video files compatible with mobile devices and Web services.

After you add photos, you can easily rearrange, delete, or tweak them with the built-in (but basic) editing tools. Once the photos are set, you can apply a style and other customizations to the slideshow. The software can be a bit much if you just want to create a basic slideshow; but if you're willing to put time and effort into using DVD Slideshow Builder Deluxe, you'll find plenty of features. You can add music, clip art, credits, and other elements.

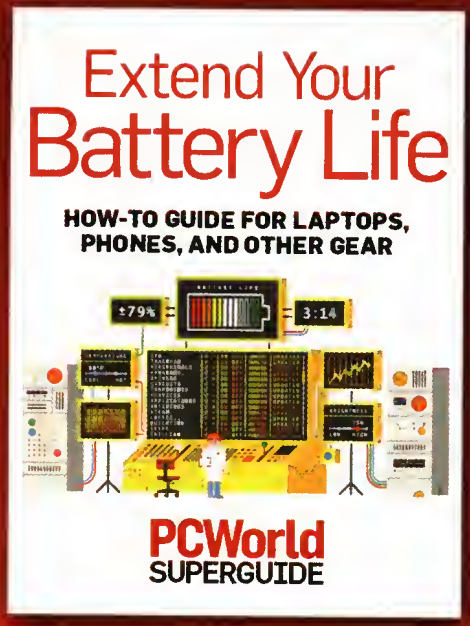
Microsoft's free Windows Movie Maker, included with most Windows PCs, provides some of the same features. Windows Movie Maker lets you import photos, add music, set transitions, and more, but you get fewer advanced options there than you do in Wondershare's application. Microsoft's program is a bit simpler to use than DVD Slideshow Builder Deluxe, but the results are somewhat less sophisticated, too. And though Windows Movie Maker lets you publish your video slideshows to the Web or share them via email, it doesn't allow you to burn them to a DVD unless you have Windows DVD Maker. One significant advantage of Windows Movie Maker is that it includes some basic video-editing features, whereas Wondershare's program creates video slideshows exclusively. *—Liane Cassavoy*

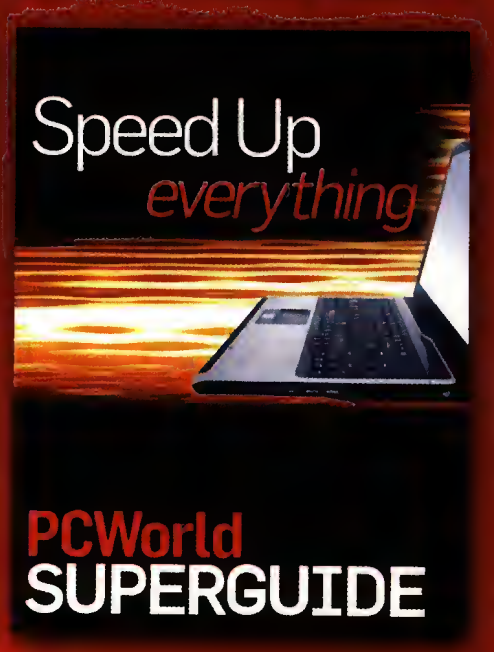
★★★½☆; $60; Wondershare Software; go.pcworld.com/dvdslideshowbuilder



DVD Slideshow Builder Deluxe lets you switch tasks easily.

PCWorld SUPERGUIDES





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Pogoplug Upgrades Its Network-Attached Storage

POGOPLUG LETS YOU turn any USB-attached drive into a network-accessible drive. Pogoplug's Series 4 is a vast improvement over previous models, starting with the upgrade of the USB ports to the 3.0 standard. In addition, Series 4 offers a SATA/USM slot on the top of the unit and an SD Card slot.

Pogoplug's updated Series 4.

Pogoplug makes establishing your own remotely accessible storage easy. Power up the unit, attach it to your network router or switch, and step through a simple online setup procedure using your browser—you then can access the unit (as well as any attached drives) from anywhere you have an Internet connection. You don't even have to enter a unit ID, as in the past.

The Pogoplug website portal where you upload, download, share, and view files is capable enough to get the task done. You use an email address and a password to log on. Of course, you're limited to the speed of your connection, but if you connect from the same local network, the Pogoplug is smart enough to bypass the Web portal and use the local connection for much faster uploads and downloads.

With Series 4, Pogoplug has finally addressed a major concern about the company's devices—that they would be useless if the company/portal ever went belly-up. The company now has a PC/Mac/Linux software client that lets you directly access (restore) the files contained on the connected storage, and back up files from your PC. Portal or no, you can now use the Pogoplug for local network storage. *—Jan L. Jacabi*

★★★½☆; $50; Pogoplug; go.pcworld.com/pogoplug4

Limit Email Messages to Ones You Want to See

DOWNLOAD

The simple, cloud-based service SaneBox brings order to your email inbox for $5 per month. When you enter your email address at the SaneBox site and give the service permission to access your IMAP-based email account, it analyzes your inbox's contents. Connect social networks such as Facebook, LinkedIn, and Twitter to give SaneBox additional information to base its decisions on.

In about 15 minutes, SaneBox whittled my Gmail account down from 32,000 messages (1000 of them unread) to 1200 messages (100 of them unread). It moved the other messages to newly created folders with names such as SaneLater. Instead of hundreds of messages a day, I was receiving two dozen, and my unread messages were in the single digits.

On the few occasions when SaneBox stumbled—delivering billing statements or personal messages that I would have wanted to see immediately to my SaneLater folder—fixing the errors was easy. SaneBox delivers a regular summary of its sorting activities, which you can skim to see what you've been missing. You can train SaneBox to deliver messages from some senders to your inbox. To peruse your SaneLater folder, simply open it; the folder appears on any email client you use.

SaneBox notes how many messages it puts in your SaneLater folder.

When you drop a message into the SaneBlackHole folder, future messages from that sender will be hidden from view.

I was skeptical of SaneBox's claim to save the average user 2 hours per week; but after using it, I think it may have saved me even more time than that. *—Liane Cassavoy*

★★★½☆; $5/month; SaneBox; go.pcworld.com/sanebox

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LAB TESTED

BY LOYO CASE
PHOTOGRAPHS BY ROBERT CARDIN

The Ultrabook Revolution

Laptops are undergoing radical change, with the latest crop of Ultrabooks leading the way.»

The PC is undergoing its most radical makeover since the advent of the IBM PC three decades ago. Ultrabooks and Windows 8 are leading the charge. Slim Ultrabook designs succeed where netbooks failed, delivering performance, battery life, and a full-featured computing experience. Ultrabooks, once seen as mere copies of Apple's MacBook Air, are now extending its concept. Experiments such as Toshiba's Satellite U845W, with its cinematic widescreen aspect ratio, are expanding the definition of what a PC is.

Revolutions are chaotic. They upset the status quo and leave old ways of doing things behind. The PC, once the spearhead of the personal digital revolution, may seem antiquated alongside sexy new tablets and smartphones designed for an always-connected world. In reality, the PC is an intimate participant in the current revolution, changing its own nature to respond to new usage models and a new generation of users. Microsoft's recent announcement of the Surface—a Windows 8 PC posing as a tablet—shows the PC's flexibility and relevance in the modern digital era.

Today's Ultrabooks—skinny, light laptops that Intel is pushing PC makers to build—represent the future of the PC. Tablets are great for browsing the Web and consuming media, but users need keyboards and expandability for better productivity. Ultrabook manufacturers are adopting some of tablets' best features, like multitouch and long battery life, while retaining the essence of the PC as the ultimate digital productivity tool.

The new computing revolution is upon us thanks to a legion of users and developers who are creating new ways of interacting with data and with each other in a connected society. These are not incremental changes, but the first salvo from users and app builders who have never known a world without the Internet. And the new PC is taking a primary role in addressing those needs.

Apple and Microsoft are creating uniform operating environments, enabling a seamless transition from mobile phone to PC or Mac, all connected via cloud services. Windows 8 is at the forefront, with the same OS core at the heart of Windows 8 Phone, Windows RT for tablets, and Windows 8 on the PC.

The New Revolution

Always-on connectivity, the cloud, and easy mobility define this personal technology revolution. Users have had a role in the revolution as well, embracing digital media consumption instead of viewing digital devices as mere hardware. Smartphone and tablet users—in particular, iPhone and iPad owners—have led the way. As in the early days of the personal computer (before the IBM PC), originally the smartphone market was highly fragmented, with diverging views of what users wanted. After the iPhone, almost all phones look startlingly similar, and having a data plan with your phone is now mainstream.

After a slow start, PC makers are embracing the change. Intel's Ultrabook program is driving mainstream adoption of ultrathin, ultraportable computers that offer far fewer compromises than the netbooks of recent memory. Most of these designs—including Apple's—are based on Intel hardware.

However, the new generation of Ultrabooks has been relatively slow to adopt the always-connected model, with surprisingly few units shipping with built-in cellular broadband. Even Apple, which has led in other design areas, has yet to build cellular broadband capability into its MacBook Pro and MacBook Air lines.

As true 4G networks become more widespread, this situation might change, especially as cloud storage becomes virtually a part of the operating system. Apple is already going in this direction with iCloud, and Microsoft will be integrating its own SkyDrive cloud storage service into Windows 8.

Microsoft's upcoming Surface tablets show how PCs are evolving in other directions. The Surface RT model, based on ARM processor technology, is locked into Microsoft's app store, much as Apple's iPad is locked into iTunes. But the Surface Pro is going to be an

Ultrabooks are driving mainstream adoption of ultrathin, ultraportable PCs with few of the compromises of netbooks.

ultrathin PC—a kind of Ultrabook—in a tablet skin, with a fully functional Windows desktop and the ability to run most Windows applications.

Windows 8: Extending Windows to the Cloud

The Surface and Windows 8 herald a change in how Microsoft views the PC: The cloud, once an accessory, is now one of the centerpieces of Windows.

SkyDrive is integral to Windows 8, letting applications such as Microsoft Office 2013 use cloud storage natively. SkyDrive enables Microsoft to extend its ecosystem to tablets and mobile phones, too, as users can easily access their SkyDrive data from their cell phones, tablets, or PCs. (Since most current Ultrabooks don't offer built-in cellular broadband, however, Ultrabook users on the go still need to find Wi-Fi hotspots, or carry portable cellular hotspots, to take advantage of the cloud.)

In addition, with Office 2013 and Windows 8, Microsoft hopes to make multitouch interfaces mainstream. That doesn't necessarily mean touchscreens: Larger, enhanced touchpads with edge detection will make Windows 8 much more navigable than previous kinds of built-in pointing devices could have.

The Apple Factor

Apple's huge success with the iPad, iPhone, and MacBook Air has prodded traditional PC manufacturers into exploring new hardware designs. While Apple hasn't significantly eroded Windows' market share on the desktop, Apple's laptop sales are gaining ground. The MacBook Air became the poster child for ultrathin mobile computers. The Air's success likely spawned the Ultrabook, and dozens of Ultrabook models are now flooding the market.

The new MacBook Pro with its Retina display brings 2880-by-1800-pixel resolution to Apple's premium laptop line. That translates to a pixel density of 220 pixels per inch. PC manufacturers are not far behind, though: The new crop of 13-inch Ultrabooks with 1080p displays have a pixel density of 160 ppi. A bar has been set, and users will consider high-quality displays to be essential.

The Laptop Landscape

Intel's Ivy Bridge processor delivers mainstream x86 CPU performance on a much lower power budget than previous generations. Although Ultrabooks debuted with the earlier Sandy Bridge CPUs, it is Ivy Bridge that truly delivers on the promise of longer battery life and new system shapes and sizes, most of them sleeker, lighter, and more efficient than past designs. At the Computex trade show in June, laptop makers showed a plethora of PC prototypes—some radical, others minor design tweaks. The Asus Taichi, for example, is a laptop with a detachable touchscreen that becomes a stand-alone tablet.

Companies are also experimenting with exotic materials to reduce weight. Lenovo's ThinkPad X1 Carbon and Gigabyte's X11 both use carbon fiber as the main chassis material. Toshiba's U845W offers a 21:9-aspect-ratio display with a native resolution of 1792 by 768 pixels, which can deliver widescreen movies in their native format.

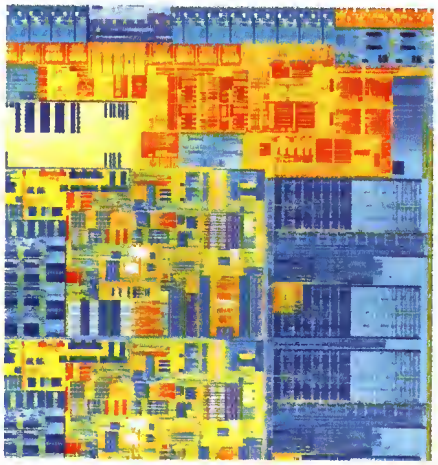
It's unclear which designs will ultimately win consumers' hearts. What is clear is that the era of blah-looking, 15.6-inch clones housed in bulky plastic is coming to an end. »

The Evolving Ultrabook

ORIGINALLY ULTRABOOKS had to have a few baseline features—such as a battery life exceeding 5 hours, fast resume from sleep, and a "sleek, stylish design"—to qualify for use of the Ultrabook logo.

Its new Ivy Bridge CPU gave Intel the impetus to enhance the definition of an Ultrabook. Intel now requires these new features:

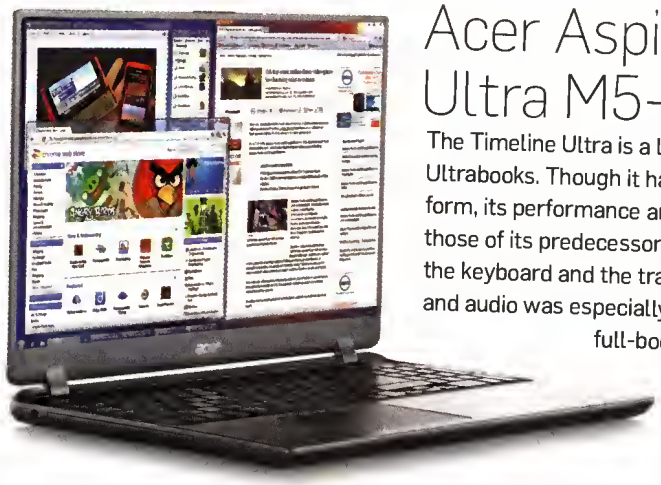
- **Fast file transfer via USB 3.0, the Thunderbolt interface, or both.**
- **Better responsiveness, from using solid-state drives, or via Intel's Smart Response Technology (this uses small SSDs as massive, fast caches for hard drives).**
- **Built-in hardware security, including identity protection and antitheft technology.**



New chips are giving impetus to new designs.

Enhanced Ultrabooks might also add multitouch; more robust sensors, including accelerometers; and Intel WiDi for streaming data to HDTVs.

However, this won't be the final chapter in the evolution of the definition of an Ultrabook. Intel's next-generation CPU architecture, code-named Haswell, will bring substantial improvements to 3D graphics, greater power efficiency, and more performance. Intel sees Haswell as a disruptive CPU technology, enabling a larger variety of designs and longer battery life without sacrificing performance.



Acer Aspire Timeline Ultra M5-581TG-6666

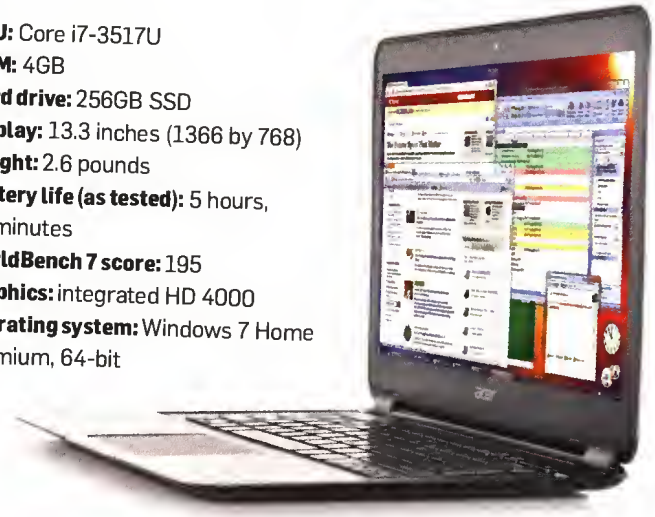
The Timeline Ultra is a little bigger and heavier than most Ultrabooks. Though it has excellent specs for its svelte form, its performance and its screen aren't quite up to those of its predecessor, the Timeline Ultra M3. But both the keyboard and the trackpad are comfortable to use, and audio was especially impressive, remaining loud and full-bodied at the highest volume setting. All in all, it's a very good-looking ultraportable laptop. ★★★★½; **$829**; go.pcworld.com/acertimelinem5

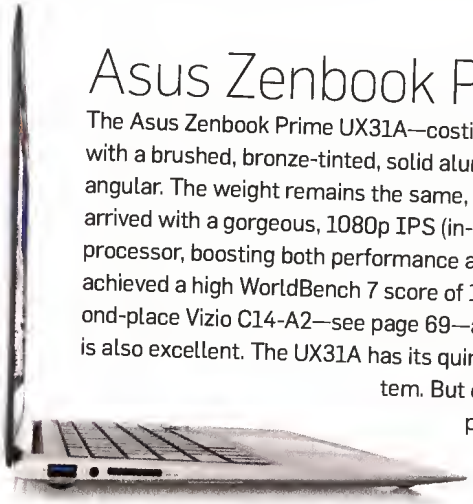
- **CPU:** Core i5-3317U
- **RAM:** 6GB
- **Hard drive:** 500GB, 20GB caching SSD
- **Display:** 15.6 inches
- **Weight:** 4.8 pounds
- **Battery life (as tested):** 7 hours, 24 minutes
- **WorldBench 7 score:** 104
- **Graphics:** Nvidia GeForce GT 640M
- **Operating system:** Windows 7 Home Premium

Acer Aspire S5

If you're looking for an Ultrabook with the super-slim good looks of a MacBook Air, enough computing oomph to handle multimedia and general business tasks, plus a good-enough battery life, take a long hard look at the Acer Aspire S5. Though a little pricey at $1399, it's not spectacularly so. And the S5 achieved a stratospheric score of 195 on our WorldBench 7 test suite. It also has decent battery life and dual-band Wi-Fi, and did well in our gaming tests. This sleekly designed model poses one of the most credible threats to the MacBook Air that we've seen to date. ★★★★½; **$1399**; go.pcworld.com/aceraspires5

- **CPU:** Core i7-3517U
- **RAM:** 4GB
- **Hard drive:** 256GB SSD
- **Display:** 13.3 inches (1366 by 768)
- **Weight:** 2.6 pounds
- **Battery life (as tested):** 5 hours, 28 minutes
- **WorldBench 7 score:** 195
- **Graphics:** integrated HD 4000
- **Operating system:** Windows 7 Home Premium, 64-bit

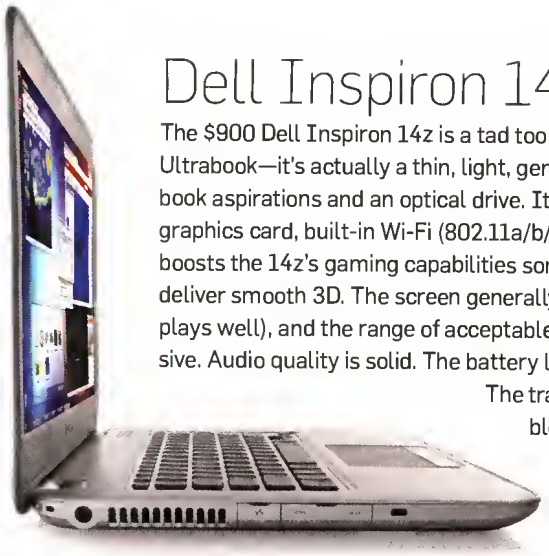




Asus Zenbook Prime UX31A

The Asus Zenbook Prime UX31A—costing about $1449—resembles the old UX31E, with a brushed, bronze-tinted, solid aluminum shell that looks slightly dangerous and angular. The weight remains the same, at 3 pounds and an ounce. But our test model arrived with a gorgeous, 1080p IPS (in-plane switching) display and an Ivy Bridge processor, boosting both performance and screen quality. This new Asus also achieved a high WorldBench 7 score of 150 (taking third place, behind only the second-place Vizio C14-A2—see page 69—and the Asus Aspire S5, above); its battery life is also excellent. The UX31A has its quirks, such as an oddly partitioned storage system. But overall, this new Zenbook represents a near-pinnacle of the Ultrabook design (it looks fabulous, too). ★★★★½; **$1449**; go.pcworld.com/asusux31a

- **CPU:** Core i7-3517U
- **RAM:** 4GB DDR3
- **Hard drive:** 256GB SSD
- **Display:** 13.3 inches
- **Weight:** 3.1 pounds
- **Battery life (as tested):** 6 hours, 24 minutes
- **WorldBench 7 score:** 150
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium



Dell Inspiron 14z

The $900 Dell Inspiron 14z is a tad too big and heavy to be a proper Ultrabook—it's actually a thin, light, general-purpose laptop with Ultrabook aspirations and an optical drive. It also comes with a discrete graphics card, built-in Wi-Fi (802.11a/b/g/n) and Bluetooth 4.0. The GPU boosts the 14z's gaming capabilities somewhat, and the laptop can even deliver smooth 3D. The screen generally looks good (high-definition video plays well), and the range of acceptable viewing angles is pretty impressive. Audio quality is solid. The battery life is average for an Ultrabook. The trackpad (which is multitouch capable) may take some practice to get used to, but the keyboard is spillproof. ★★★☆☆; **$900**; go.pcworld.com/dellinspiron14z

- **CPU:** Core i5-3317U
- **RAM:** 8GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 14.0 inches
- **Weight:** 4.1 pounds
- **Battery life (as tested):** 5 hours, 25 minutes
- **WorldBench 7 score:** 120
- **Graphics:** ATI Radeon HD 7570M
- **Operating system:** Windows 7 Home Premium, 64-bit

Dell XPS 14

The XPS 14 excels at multimedia, has great battery life, and performs decently, but it's heavy and a bit pricey. It boasts an exceptionally bright, high-res (1600-by-900-pixel) widescreen display (covered by bonded Corning Gorilla Glass) and a discrete graphics chip for games and video. The keyboard and touchpad are both satisfactory. On the whole, though, its weight makes this model more suited to occasional travelers than to frequent fliers. ★★★½☆; **$1500**; go.pcworld.com/dellxps14

- **CPU:** Core i7-3517U
- **RAM:** 8GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 14.0 inches
- **Weight:** 4.7 pounds
- **Battery life (as tested):** 7 hours, 37 minutes
- **WorldBench 7 score:** 79
- **Graphics:** Nvidia GeForce GT 630M
- **Operating system:** Windows 7 Professional, 64-bit

Fujitsu Lifebook UH572

While it looks good, boasts a nice, high-def webcam, and packs a roomy hard drive, this 13.3-inch unit disappoints somewhat. Although reasonably priced at $999, this consumer sibling of the business-oriented Lifebook UH772 delivers subpar performance, and the keyboard isn't ideal. Still, the unit does have this interesting feature: It supports Intel's Wi-Di technology for beaming a notebook display to a TV that also supports Wi-Di (if you also have a Wi-Di adapter). If industrial design contributed to our scoring, however, the UH572 would have done better. From its brushed silver magnesium alloy cover to its smooth black interior with blue lighting accents, the UH572 looks like a class act. ★★★☆☆; **$999**; go.pcworld.com/lifebookUH572 »

- **CPU:** Core i5-3317U
- **RAM:** 4GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 13.3 inches
- **Weight:** 3.5 pounds
- **Battery life (as tested):** 4 hours, 29 minutes
- **WorldBench 7 score:** 97
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium

HP Envy 4-1030us

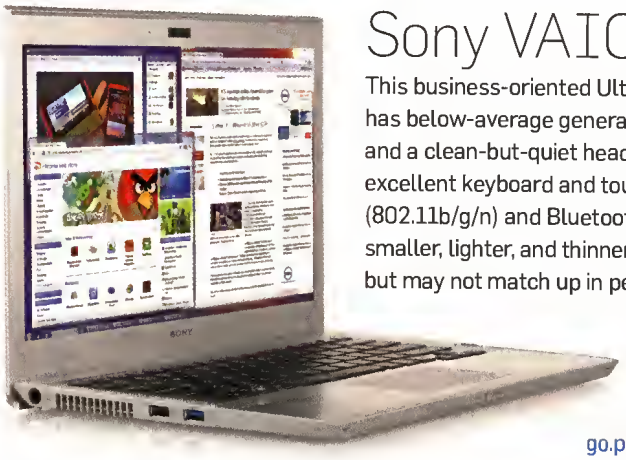
The HP Envy 4 is aptly named—this Ultrabook's premium design and subtle pop of color should make it the envy of ultraportables everywhere. But don't expect much in the way of graphics performance or gaming (the Envy 4 has no discrete graphics card). This attractive ultraportable features a flat, plateau-like brushed aluminum cover and a sexy red undercarriage. Plus, it's a solid performer and has excellent speakers. The keyboard is attractive, but typing accurately can be a difficult task. The trackpad supports multitouch gestures, which are fairly smooth. Other pluses are its good performance scores and excellent speakers. The Envy 4 also features built-in Wi-Fi and Bluetooth 4.0. ★★★½☆; **$870**; go.pcworld.com/hpenvy4

- **CPU:** Core i5-3317U
- **RAM:** 4GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 14.0 inches
- **Weight:** 3.9 pounds
- **Battery life (as tested):** 5 hours, 45 minutes
- **WorldBench 7 score:** 126
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium, 64-bit

Lenovo IdeaPad U310

The Lenovo IdeaPad U310 performs well, as long as you're not looking to do anything fancy. It has loud, if sometimes thin, speakers and a good-looking but dim screen. It also has decent, but not great, battery life. As with many Ultrabooks, the port selection is modest, but they include two USB 3.0 ports, an HDMI-out, and an ethernet connection. At the end of the day, the U310 will most likely appeal to college students and other young, budget-minded shoppers who will like its bright, fun colors. ★★★☆☆; **$799**; go.pcworld.com/ideapadU310

- **CPU:** Core i5-3317U
- **RAM:** 4GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 13.3 inches
- **Weight:** 3.7 pounds
- **Battery life (as tested):** 5 hours, 27 minutes
- **WorldBench 7 score:** 94
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium

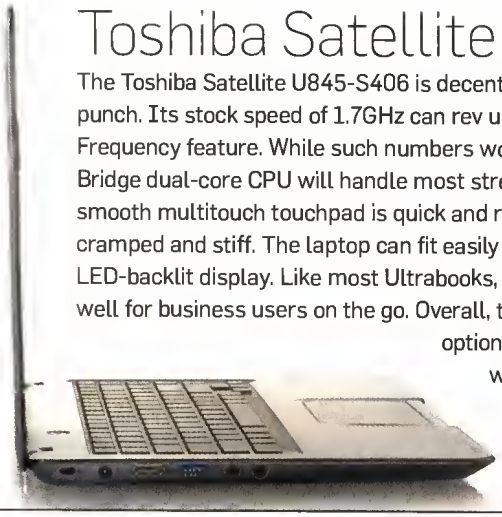


Sony VAIO SVT13114GXS

This business-oriented Ultrabook is pretty and light. It has below-average general performance, a dim screen, and a clean-but-quiet headphone jack, but it also has an excellent keyboard and touchpad. It has, as well, Wi-Fi (802.11b/g/n) and Bluetooth 4.0. This VAIO may be smaller, lighter, and thinner than some other Ultrabooks, but may not match up in performance or usability. Unless you're considering only aesthetics, look elsewhere for a business ultraportable. ★★★½☆; **$849**; go.pcworld.com/sonysvt13114gxs

- **CPU:** Core i5-3317U
- **RAM:** 4GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 13.3 inches
- **Weight:** 3.4 pounds
- **Battery life (as tested):** 6 hours, 2 minutes
- **WorldBench 7 score:** 126
- **Graphics:** integrated
- **Operating system:** Windows 7 Professional, 64-bit

Toshiba Satellite U845-S406



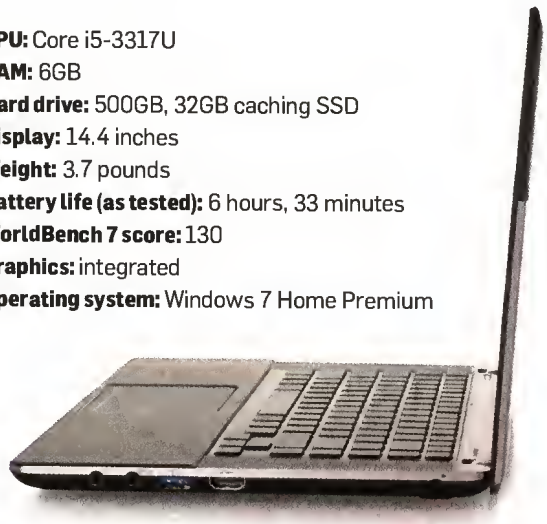
The Toshiba Satellite U845-S406 is decently priced and still manages to pack quite a punch. Its stock speed of 1.7GHz can rev up to 2.6GHz with Intel's maximum Turbo Frequency feature. While such numbers won't impress power-PC enthusiasts, the Ivy Bridge dual-core CPU will handle most stressful tasks with ease. The pleasantly smooth multitouch touchpad is quick and responsive, but the keyboard's keys are cramped and stiff. The laptop can fit easily in a typical backpack, yet sports a 14-inch LED-backlit display. Like most Ultrabooks, it lacks an optical drive, but it should serve well for business users on the go. Overall, the Toshiba Satellite U845-S406 is a great option if you need just a little extra power for work on a business trip, but don't feel like shelling out lots of cash for a desktop replacement. ★★★★½; **$880**; go.pcworld.com/toshibau845-s406

- **CPU:** Core i5-3317U
- **RAM:** 6GB
- **Hard drive:** 500GB, 16GB caching SSD
- **Display:** 14.0 inches
- **Weight:** 3.7 pounds
- **Battery life (as tested):** 6 hours
- **WorldBench 7 score:** 127
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium

Toshiba Satellite U845W-S410

This elegant-looking laptop targets movie buffs, but it's not a good choice for productivity or gaming. Its LCD panel has an unusual 21:9 aspect ratio—perfect for viewing widescreen movies without letterboxes, and the S410's sound quality is top-notch; battery life is also excellent. In addition, the S410 has a nicely rounded set of connectivity options, lacking only cellular broadband. The keyboard, though, provides little tactile feedback, so it's not the best for touch-typing. This cool-looking laptop would be great for casual use. But if you need a laptop to get work done, you can find better alternatives.
★★★½☆; **$930**; go.pcworld.com/toshiba_u845w-s410

- **CPU:** Core i5-3317U
- **RAM:** 6GB
- **Hard drive:** 500GB, 32GB caching SSD
- **Display:** 14.4 inches
- **Weight:** 3.7 pounds
- **Battery life (as tested):** 6 hours, 33 minutes
- **WorldBench 7 score:** 130
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium



Vizio C14-A2

Vizio's first entry into PCs makes a bold design statement and gets many things right, though it omits some features such as a built-in flash-memory card reader and an ethernet jack. Its overall performance, though not its WorldBench score, is close to a dead heat with the highly rated, but pricier, Acer Aspire S5, and its CPU supports hyperthreading. As with many very thin and light systems, tested battery life is a tad short, and the speakers disappoint. While the C14-A2 is a pleasure to use, it's not perfect. The keyboard and touchpad are quite usable, though pointing behavior could still be better. The display is decent, not fabulous, but its size and resolution are welcome. Overall, the C14-A2 feels solid, looks good, handles typing well, and performs like a champ. ★★★★½; **$1199**; go.pcworld.com/vizioc14-a2 ●

- **CPU:** Core i7-3517U
- **RAM:** 4GB DDR3
- **Hard drive:** 256GB SSD
- **Display:** 14 inches
- **Weight:** 3.4 pounds
- **Battery life (as tested):** 5 hours, 17 minutes
- **WorldBench 7 score:** 158
- **Graphics:** integrated
- **Operating system:** Windows 7 Home Premium, 64-bit

WHICH CAMERA IS YOUR PERFECT FIT?

'One size fits all' doesn't apply to cameras, but the ideal device for your photography needs is out there.

From pocket cameras to pricey DSLRs, find out which model is picture-perfect for you. »

BY TIM MOYNIHAN

Which is toughest?

Which works best for kids?

Which megazoom fits in a pocket?

PHOTOGRAPHS ROBERT CAROIN

BEST POCKET MEGAZOOM

If you want an excellent blend of zoom range, shooting modes, and image/video quality, the 20X-optical-zoom (25mm to 500mm) Canon PowerShot SX260 HS delivers on all fronts—and fits in your pocket. At $350, the SX260 HS offers a 10-frames-per-second burst mode, manual controls, and options for low-light shots. It has some weak spots, however: no RAW mode, middling battery life, and a maximum aperture of F3.5. go.pcworld.com/canonsx260hs

BEST PREMIUM POCKET CAMERA

Camera makers have struggled for a long time to create the ultimate pocket camera, but Sony may have succeeded with the Cyber-shot DSC-RX100. This high-end point-and-shoot camera comes with specs to match: a much bigger sensor than most cameras in its class, a fast F1.8 lens, manual controls for stills and video, and versatile shooting modes. At $650, its price tag is comparable to those of entry-level DSLRs. go.pcworld.com/cybershotDSCRX100

PHOTOGRAPH (TOP): ROBERT CARDIN

BEST SUB-$300 PREMIUM POCKET CAMERA

The premium point-and-shoot class offers affordable alternatives to the Sony Cyber-shot DSC-RX100. The $280 Nikon Coolpix P310 has a bright F1.8 lens, full manual controls, an array of low-light shooting modes, a 16-megapixel sensor, and a very compact body. It lacks the RX100's sensor size and video options, but it offers impressive specs for the money. go.pcworld.com/nikonp310

BEST CONTINUOUS SHOOTING MODE

A speedy continuous shooting mode is handy for taking photos of fast-moving subjects—athletes, babies, pets, street scenes—because it gives you multiple chances to nab the perfect shot. The speedy Sony Alpha SLT-A77 ($1400, body only) shoots at a clip of 12 frames per second at the camera's full resolution of 24.3 megapixels. The SLT-A77's "translucent mirror" technology drives a phase-detection autofocus system that keeps moving objects in focus, but also leaves the camera without a traditional DSLR-style optical viewfinder. go.pcworld.com/sonyalphaslta77 »

PHOTOGRAPHS: ROBERT CARDIN

BEST RUGGED FEATURES

Most rugged cameras concentrate solely on being able to take a clobbering better than Ben Grimm. Typically, their unimpressive core specs roughly match those of basic point-and-shoots. But not this one. The flagship camera in Olympus's Tough lineup, the TG-1 iHS ($400) sports an F2.0 lens, a 10-frames-per-second burst mode at full resolution (and a 60-fps burst mode at 3 megapixels), 1080p video capture, and low-light shooting modes. The camera is no slouch on durability, either, thanks to a waterproof rating of 40 feet and a crushproof rating of 220 pounds. go.pcworld.com/olympustg1ihs

BEST MODEL FOR A YOUNG CHILD

Little kids love taking pictures. They also love dropping things and smearing melted chocolate everywhere, so you may not trust them with your DSLR or smartphone. Nikon's Coolpix S30 ($120) is built with children in mind, but it's more like a normal camera than what you'd get from Fisher-Price. It's waterproof and drop-proof, has an array of shooting modes and creative filters, and captures 720p video. But after they use it, make sure your kids understand that not all cameras are waterproof. go.pcworld.com/coolpixs30

BEST DISGUISED RUGGED FEATURES

Sony's Cyber-shot DSC-TX20 ($330) looks and feels like an everyday ultracompact point-and-shoot camera; but its 0.7-inch-deep, stylish frame is waterproof to 16 feet underwater, freezeproof, shockproof against drops of as much as 5 feet, and dustproof. The 16-megapixel, touchscreen-operated TX20 has a 4X-optical-zoom lens and a range of in-camera features for handling low-light shooting. go.pcworld.com/cybershotdsctx20

PHOTOGRAPHS (TOP, BOTTOM): ROBERT CAROIN

BEST GPS FEATURES

Many cameras include built-in GPS and geotagging capabilities these days, but most of them offer a bare-bones implementation. The 10X-optical-zoom Casio Exilim EX-H20G ($300) offers the best in-camera GPS features available, including mapping and a points-of-interest database with real-world location names (not just longitude/latitude coordinates), as well as superb battery life (600 shots per charge) that makes the various extra features all the more usable. It's not a bad camera, either, delivering very good image quality and fun in-camera features. go.pcworld.com/casioexh20g

BEST INSTRUMENTS

You can easily find a new camera with GPS features, but you'll have to look to the ruggedized Panasonic Lumix DMC-TS4 ($400) if you want a camera with a built-in barometer, altimeter, depth indicator (for underwater shots), and electronic compass. The TS4 is sturdy, too, with a waterproof rating of 40 feet and a drop-proof rating of 6.6 feet to complement its stabilized 4.6X-optical-zoom lens (28mm to 128mm) and 12-megapixel sensor. go.pcworld.com/lumixdmcts4 »

BEST CAMERA FOR $200

The 14X-optical-zoom Canon PowerShot SX230 HS is available these days for around $200. That's an excellent price for a versatile camera that features manual exposure controls, built-in GPS, 1080p video recording, fast-capture modes for stills (8 frames per second) and video (240 fps), and very good image quality according to PCWorld Labs tests. go.pcworld.com/canonsx230hs

BEST CAMERA FOR $400

Panasonic has just announced the successor to the Lumix DMC-LX5 (the F1.8-aperture Lumix DMC-LX7), which means that you can probably find the older LX5 for less than $400. If you like being able to fine-tune your photos and video while you shoot them, you'll find that the LX5 has few peers at its size or price, with manual exposure controls for both stills and video. Its lens's maximum aperture of F2.0 is great for low-light shots, and it comes with Panasonic's lightning-fast autofocus system. go.pcworld.com/lumixdmclx5

BEST CAMERA FOR $600

We've seen this excellent DSLR on Amazon at prices of $600 for the body only and $650 as a kit with a standard 18-55mm lens. Along with a tilt-and-swivel 3-inch LCD viewfinder, the Nikon D5100 offers a 16-megapixel APS-C sensor, 1080p video capture at 30 frames per second and 24 fps, excellent image and video quality, and some of the most outstanding low-light performance we've seen from a camera of its ilk. go.pcworld.com/nikond5100

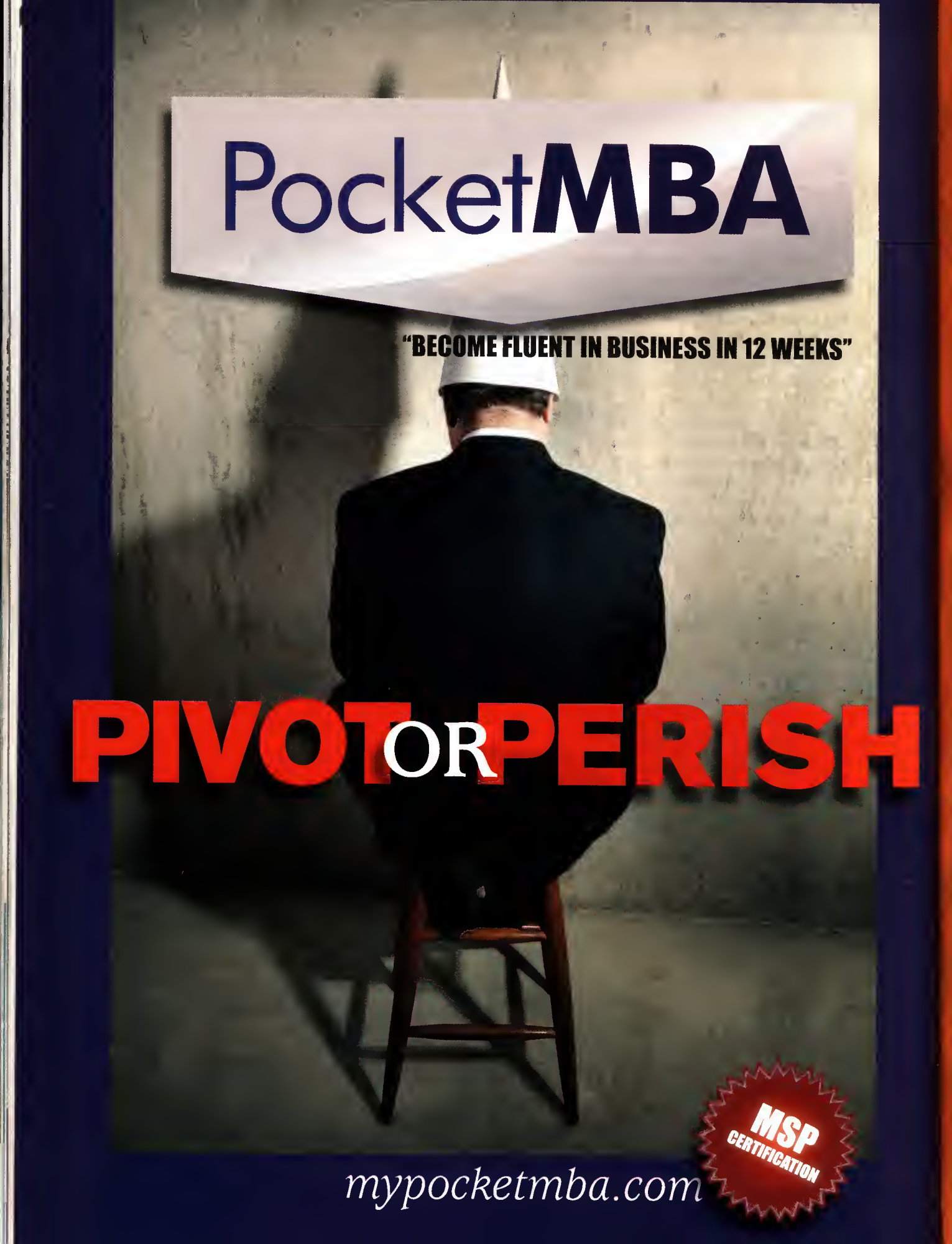
PHOTOGRAPH (TOP): ROBERT CARDIN

BEST CAMERA FOR $800

If you can't afford Sony's fast-shooting Alpha SLT-A77, consider opting for its Alpha SLT-A57 instead. The Alpha A57 features similarly blazing speed and quick autofocus action for less than half the price when purchased as a kit (just $800). This lower-cost sibling shares the A77's translucent-mirror technology; however, its lower-resolution sensor (16 megapixels, versus the A77's 24.3 megapixels) knocks the camera's image resolution down to 8 megapixels while capturing 12 photos per second at its highest-speed burst mode. For video capture, it's a standout camera, with the ability to shoot 1080p video at a brisk 60 frames per second. go.pcworld.com/sonyalphaslta57

BEST CAMERA FOR $1000

At $1000 for the body only, the Canon EOS 60D isn't cheap, but it carries the same 18-megapixel APS-C sensor as its higher-end sibling, the EOS 7D (which costs $700 more), and its fine performance reflects the presence of that component. When we ran the 60D through its paces in the PCWorld Labs, it earned scores of Superior or Very Good in every imaging category. In addition, it shoots excellent 1080p video, making it a great pick for photographers and videographers alike. go.pcworld.com/canoneos60d


PocketMBA
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The Truth About FREE TRIALS

We handed over our credit card for 40 online trials, to find out the real cost of 'free.' »

BY TOM SPRING

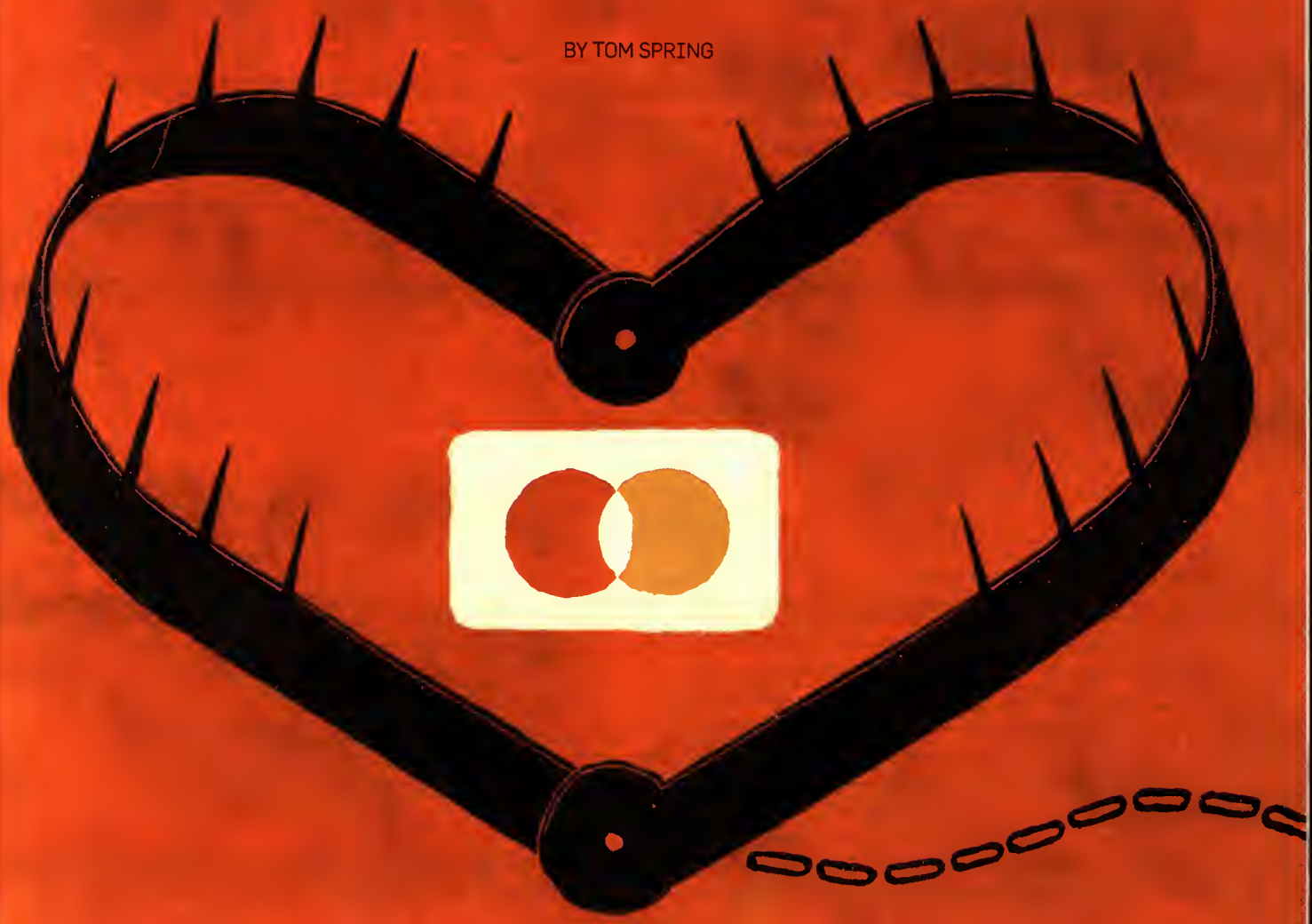


ILLUSTRATION BY ADAM McCAULEY

The offer was tempting:

I could read exclusive online articles about my beloved Red Sox on ESPN Insider, for just $44.95 a year. And to be sure that it would be money well spent, I could sign up for a seven-day free trial. I bit, coughing up my credit card number as part of the deal.

Unfortunately, I couldn't get off the hook.

Finding Red Sox slugger David Ortiz's career RBI totals took seconds on ESPN, but trying to learn how to cancel the free ESPN Insider trial was considerably harder. I searched, clicked, and navigated to what felt like every corner of the site, to no avail. Before giving up I sent ESPN customer service a terse email message requesting that my account be canceled. The next day, the day that my free trial expired, my credit card was charged $44.95.

Later I called ESPN customer service, and a cheerful woman named Yvonne told me, "There is no way to cancel online; you have to call to cancel." Why couldn't I find that out online?

After refusing to refund me 100 percent of my $44.95, she transferred me to a supervisor who reiterated the refund policy and then explained how to find the cancellation policy on ESPN.com. I had tried to unearth a cancellation form by clicking the 'My Account' link, but instead I was supposed to go to 'Radio and More' to see the cancellation policy. Who knew?

TROUBLESOME FREE TRIALS MAKE QUITTING DIFFICULT

PROBLEM	TrustFax	LifeLock	GameHouse	Identity Guard	Spotify	RealPlayer SuperPass	Tech Support for Dummies
Severe annoyances							
Billed after cancellation	✔			✔			✔
Buried cancellation instructions	✔	✔	✔	✔	✔		
Suffered technical glitches during cancellation			✔		✔	✔	
Moderate annoyances							
Required six or more clicks to cancel	✔	✔	✔		✔	✔	
Failed to confirm cancellation by email		✔			✔		✔
Started cancellation procedure online, but then required a phone call		✔	✔	✔		✔	✔
Time spent on phone[3]	40 minutes	12 minutes	7 minutes	10 minutes		13 minutes	12 minutes
Attempted "upselling" during cancellation	✔	✔	✔	✔	✔	✔	✔
Minor annoyances							
Failed to send a reminder at or near trial's end	✔	✔	✔	✔	✔	✔	
Failed to include instructions on canceling in welcome email	✔	✔	✔			✔	✔
Conducted an online exit interview	✔	✔		✔	✔	✔	✔
Sent commercial email even after cancellation					✔	✔	

CHART NOTES: Problems are ranked in order of severity. Among the 40 online services we tested, the 12 included here had the worst results, and are listed in order, with the poorest first. [1] We never found the offline methods, a problem that the company later attributed to technical issues. [3] With some services, cancellation required multiple calls.

Free trials are enticing, but as I learned, they come with strings attached. Back in April, in order to test how consumer-friendly free trials are, I signed up for and attempted to quit 40 free trials that required a credit card number. More than a quarter of the services I tried turned out to be a real hassle to quit.

Three of the sites charged me even though I canceled before the free trial ended. With two other sites, I wound up with a bill simply because I couldn't figure out how to cancel before the trial expired; I blame this problem on poor website design (in both cases representatives later showed me that it was possible to cancel online). And one site provided no way to quit the free trial—online or offline—so I simply gave up.

The news isn't all bad. Free trials from Hulu and Merriam-Webster, for instance, were a breeze to ditch. Hulu stood out because it offered to "remove all [my] personal information from Hulu." At Merriam-Webster's site, saying good-bye took three clicks and less than a minute. (For more about the positive experiences I had, see "Free Trials We Liked" on page 83.)

FreeCredit-Score.com	ESPN Insider	IMDb	GoToMyPC	SociallyKnow
✔	✔[1]	✔	✔	✔[1]
✔	✔	✔		✔[2]
	✔	✔	✔	
✔			✔	
✔	✔			
3 minutes	14 minutes			
✔				
		✔		✔
	✔	✔	✔	✔
✔	✔		✔	
		✔	✔	

[1] We were unable to cancel this service through online or cancellation instructions on this site. [2] We were unable to cancel this service through online or

The Biggest Hassles

In the chart at lower left, you can see the 12 services that proved to be the most aggravating when I attempted to quit.

These companies failed on several levels: A few charged me despite my having canceled in time. Nearly all of them made finding cancellation instructions extremely difficult, requiring me to perform extensive sleuthing. Many of them forced me to call the company to complete the cancellation, and threw up technical roadblocks such as nonworking phone numbers and broken links to cancellation pages. Among the somewhat less annoying practices I encountered were high-pressure sales pitches from some companies to make me keep the service, extensive exit interviews, and multiple marketing messages in my inbox even after we had parted ways.

On the other hand, the free trials that were best (see the online version of this story at go.pcworld.com/freetrials for a full chart) made it simple to end the trial, providing clear navigation, sparing me the aggressive customer-retention lectures and marketing pitches, and saying thanks for giving them a try.

In all fairness, the hassles I describe here are a matter of subjective opinion. Another person might find spending 10 minutes on the phone tolerable; for me it was highly irritating.

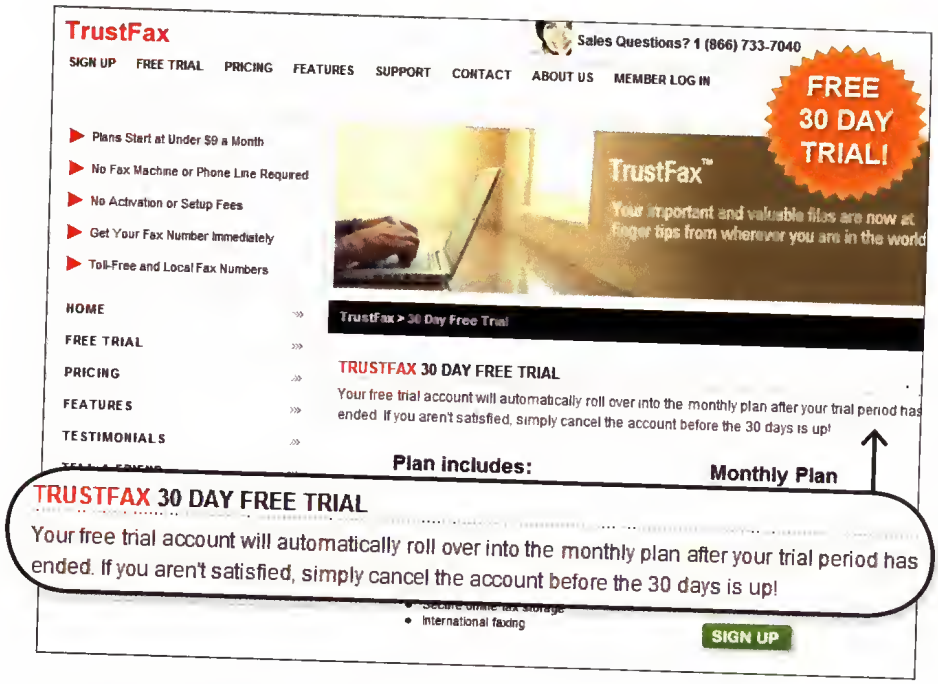
Free Trials and Tribulations

Days after canceling J2 Global's 30-day free trial of the TrustFax virtual fax service, I spotted an $8.95 charge from the company on my credit card statement. Perplexed, I tried calling TrustFax's toll-free number to dispute the charge. All I got was a voicemail message: "You have reached Verizon conferencing. The number you have dialed is not in use."

The next day I checked the TrustFax site and found that the customer service number had changed. I dialed the new number; within 20 seconds after navigating voice prompts, I was hearing hold music and a looped message saying, "Your call is very important to us. Please wait on the line for the next available representative." After 12 minutes, I hung up.

As a test, the next time I called TrustFax, I selected the sales option at the voice prompts, and within 10 seconds a cheerful sales representative was ready to take my order—but not to cancel my account.

My fourth call to TrustFax was fruitful, though. After I waited on hold for 11 minutes, a representative named Leslie came on the line and said that she would review my account. She confirmed that my account was closed, and apologized for the billing error. She even refunded me the $8.95—but not »



until after she had kept me sitting on the phone for another 17 minutes as she confirmed my billing information, put me on hold, asked me for account information, and put me on hold again. In total I spent about 40 minutes on the phone trying to stop a free trial that had taken merely a few mouse clicks and less than 2 minutes to start.

A spokesperson for TrustFax later apologized, saying that I had been billed erroneously because I had canceled on the last day of the free trial; though the billing had begun the minute my free trial was over, the company's processing of my cancellation request had taken 24 hours.

Technical Difficulties

When it's quit-or-get-billed time, technical snafus are doubly frustrating. I was surprised to see how many services—such as ESPN Insider, FreeCreditScore.com, GameHouse, IMDb Pro, RealPlayer Super Pass, and Spotify Premium—suffered from technical errors on their sites that made canceling hard.

With Spotify, for example, I ran into a password glitch. When I indicated that I wanted to cancel my Spotify account within the client software, the service-cancellation page loaded in my browser and asked me to resubmit my Spotify password. Because I had been forced to set up my Spotify account with my Facebook credentials, I entered my Facebook password. Spotify rejected that password several times, serving up an "Incorrect Password" message despite the fact that I had verified it was correct. At this point, I had few options other than to select the 'Forgot your password?' link.

Next, Spotify declared: "It looks like you are using your

Canceling on the last day of a free trial may result in charges.

Facebook credentials to log in to Spotify. To change your Facebook password go to your settings page at Facebook.com." After I changed the password using my Google Chrome browser, Spotify still refused to accept my password on its site. I couldn't unsubscribe.

Graham James, a Spotify spokesperson, later told me that I wasn't the only person hit with this bug. He said that a "medium-sized" group of people was frustrated by this problem earlier this year, and that the glitch had since been corrected. The issue, James said, was that the browser window Spotify spawned for canceling wouldn't accept Facebook passwords. The fix was to open a different browser: If you were using, say, Chrome, you could avoid the problem by opening the same Web page in Internet Explorer.

Hard to Find, Hard to Cancel

I had a particularly difficult time attempting to cancel a 30-day trial of SociallyKnow, an $11.95-a-month service that monitors your child's Facebook account and reports signs of bullying or risky communication. I could find no cancellation information on the website. The toll-free phone number that I dialed took me to an answering system that would accept only voicemail messages, with the promise that someone would get back to me. When I emailed the company's customer support department from a link on the homepage, I received bounce-back messages saying "address unknown." I never received a callback despite leaving nearly a half-dozen requests for the company to return my call.

After I contacted the company's public relations firm seeking comment for this report, I got a call from SociallyKnow's cofounder, Paul Crandell, who apologized. "There are obviously some bugs to work out," Crandell told me. He blamed technical errors for the problems I had encountered with the service's voicemail and email. SociallyKnow, Crandell admitted, should make its cancellation instructions clearer. In his

defense, he said that the site offers some disclosure about how to cancel the service, pointing to a sentence about halfway into the 3020-word terms of service that states: "The Customer may terminate its SociallyKnow account at any time and for any reason, after the first three months of service, by sending an email to support@SociallyKnow.com."

Susan Grant, director of consumer protection at the Consumer Federation of America, says that free-trial offers online account for a large number of consumer complaints to state and private consumer-advocacy agencies. "We find people complain less about the services themselves, and more about surprise charges and tricky terms of service," Grant notes. She says that typical complaints include mystery billing for services that consumers don't remember agreeing to pay for.

"Free trials are ubiquitous, and there are just no standards, which is problematic for consumers. It's very much a Wild »

Free Trials We Liked

CANCELING MY 14-DAY free-trial membership to Merriam-Webster's Unabridged Dictionary online took only three clicks, allowing me to avoid the $30 annual fee that the service would have charged to my credit card had the trial period expired. My experience in canceling Merriam-Webster's free trial was excellent, and stood in sharp contrast to the dozen sites that made cancellation feel like a hunt for a piece of cheese in a maze.

Despite the hair pulling that free trials put me through, eight services—AdaptedMind, Ancestry.com, Britannica Online, Dr. Laura, Hulu Plus, Merriam-Webster, SugarSync, and The Weather Channel—proved that it is possible to make parting ways a breeze.

What did those sites have in common? Intuitive navigation, clear instructions, and no gotchas after you click the Cancel button. Once I cut ties, these services didn't send me a barrage of commercial email and "we want you back" pleas.

Hulu Plus goes a step further and offers anyone canceling its service the option to scrub their user data, including credit card information, from its servers.

Making It Easy Is a Choice, Not an Accident

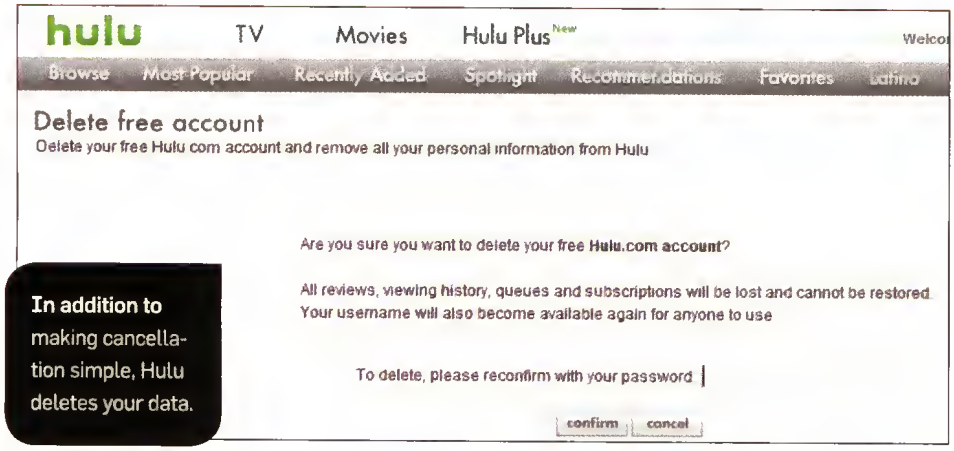
Many of the services I tested forced me to scour their FAQs for cancellation instructions. Some of the ones I spoke with defended this practice, while others simply played dumb.

Ancestry.com did a great job of steering me to its cancel option in two clicks. All I had to do was visit My Account from the homepage, and on the next screen under the Subscription Options heading was 'Cancel Subscription'.

Some sites blamed me when I couldn't find a cancel option. ESPN Insider's customer service rep told me that I should have known where the cancel option was on the site: "It's up to you to read the terms and conditions of something you are purchasing," he said. Later I saw that he was right: The company's "Terms and Conditions" document states that users need to call to cancel. Even so, though I may be guilty of not having read every terms-of-service agreement at websites, I'm not guilty of failing to try hard to cancel the services after the fact.

Companies such as the SugarSync online backup service sent an email reminder several days before the end of the free trial reminding me that I would be billed if I didn't cancel. Sadly, nice touches like this were the exception, not the rule, in my tests.

I'm guessing that most services spend a considerable amount of time and money making it easy for visitors to navigate through the site and sign up for services if they choose to—and that it's probably not by accident that sites also make it hard to cancel their services. But to those sites that make canceling free trials as simple as it is to sign up for them, my compliments.



In addition to making cancellation simple, Hulu deletes your data.

West out there," Grant says. No two free trials are the same, she says, and companies may employ several tricks. "It almost seems like they are making it hard to quit on purpose."

The Pitfalls of Free Trials

Over the course of my testing, I discovered quite a few of these tricks. If you're considering signing up for a free trial, watch for the following traps.

Free trials can cost you more in the long run: With my subscription to ESPN Insider, the terms and conditions mentioned that "the renewal rate may be higher than the introductory rate for first-time subscribers." When I checked the prices, I saw that ESPN charges $39.95 a year for ESPN Insider if you sign up without the free trial. My free-trial arrangement, in contrast, worked out to a rate of $44.95 per year.

Some free trials don't prevent you from incurring costs: My Audible 30-day free trial included two free audiobooks. But if I had listened to a third book during the trial period, I would have been charged before the end of my 30-day free trial.

Knowing when the trial starts and stops can be tricky: In some free trials, the day you start your trial is day one. For instance, if you start a seven-day free trial on a Sunday night at 10 p.m., the trial will end the following Saturday—not the following Sunday at 10 p.m. Although you might naively assume that you have seven full days from the moment you start, in fact you have only seven calendar days. This issue is particularly tricky with free trials that last 72 hours, such as the ones I tested at Match.com and at the Foreclosure Radar website.

Waiting until the last day can cost you: Canceling on the last day of a free trial may result in charges. That's exactly what happened to me (by accident, according to representatives) with my free trial subscriptions to the Cooks Illustrated culinary website and to TrustFax.

Free trials may have costly conditions: With DVD-by-mail rental services such as Blockbuster and Netflix, you must send DVDs back within a certain window, or incur a charge. Blockbuster has a grace period of ten days past the end of membership; after that it charges you $20 per DVD plus shipping and handling. Netflix has a seven-day grace period, and then charges $14 for each DVD and $20 for Blu-ray discs.

The truth might be buried in the fine print: Companies providing free trials typically emphasize the benefits of the trial while downplaying the actual terms of the offer. The Socially-Know free trial, for example, converts into paid monthly service with a three-month minimum membership requirement. So if you inadvertently allow your free trial to become a paid subscription, you're on the hook for three months of service.

Some services use scare tactics: Free trials of identity-theft protection services sometimes play fast and loose with the facts regarding the real threat of ID theft, the Consumer Federation of America found. "Some use data exaggerating the prevalence and risk of ID theft," the CFA's Susan Grant says.

How to Keep Free Trials Free

WHO KNEW THAT free trials could cost so much? Every day, millions of people get sucked into handing over their credit card numbers for a free trial. After all, signing up for a free trial is simple and quick. Getting out of a free trial is another story, though. Here are some tips for ensuring that your free trials stay free.

❶ When you see words such as "free trial" on a website, alarm bells should ring in your head—no matter how credible the site. Take a deep breath before clicking to commit to any such deal, and be sure to read all of the terms and conditions carefully.

❷ If the description of the free trial is confusing or vague, the company may be trying to hide something. Skip it!

❸ Can't find the Cancel button? Head to the site's FAQ section or to the service's terms of service, and look for the keyword "cancel" by using your browser's search function.

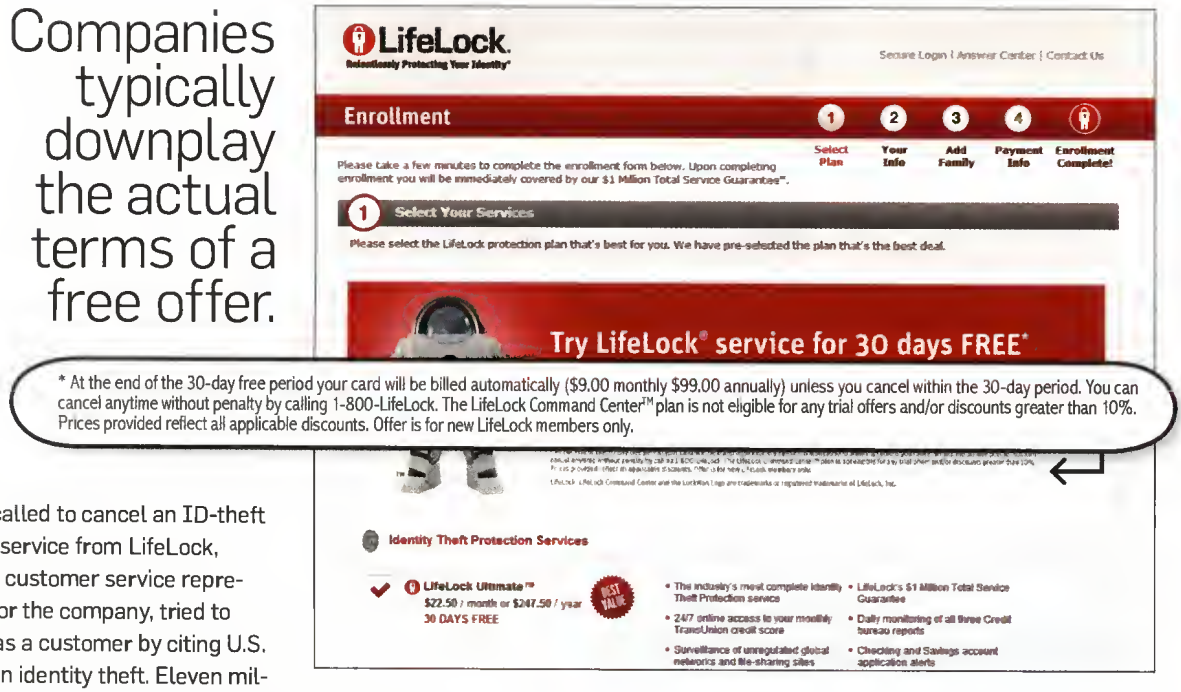
❹ Be your own detective. Before signing up for a free trial, try googling the name of the free trial and "can't cancel". Chances are, a bad actor will have an online reputation.

❺ If you are charged, call the company offering the free trial as soon as possible. Many services I spoke with said that they would give users their money back if it was an honest mistake. Others, such as ESPN, said that they would prorate the refund based on how many days of the paid service had passed.

❻ If you're billed for a service that you mistakenly forgot to cancel on time, or that you couldn't cancel after your best efforts, call your credit card company and file a formal claim. Emphasize that you've tried to get your money back from the billing company with no success.

❼ Don't shop online with your bank debit card. Credit card companies such as American Express, MasterCard, and Visa are protected under the federal Fair Credit Billing Act. When you dispute a charge on your credit card, you can ask that the credit card company withhold payment while it investigates. You don't have the same protection with a debit card purchase.

Companies typically downplay the actual terms of a free offer.



When I called to cancel an ID-theft protection service from LifeLock, Rebecca, a customer service representative for the company, tried to retain me as a customer by citing U.S. statistics on identity theft. Eleven million people last year had their identity stolen, she told me. "That number has already been superseded this year," she said. When I asked her where the statistics she had cited came from, the LifeLock rep claimed that the source was the U.S. Federal Trade Commission.

However, I checked with the FTC, and a spokesperson said that those numbers were incorrect and that the agency didn't keep official numbers on ID theft. According to the U.S. Bureau of Statistics, 8.6 million households in 2010 (the most recent figures available) reported an attempted or actual incident of ID theft where a person's identity was used to open a bank or credit account. No preliminary figures for 2012 were available.

When I asked Tami Nealy, a LifeLock spokesperson, about the issue, she told me that the 11 million figure for ID thefts in 2011 should have been credited to a report by Javelin Strategy and Research, funded in part by Intersections, an ID-theft prevention firm. Nealy said that ID theft in 2012, as compared with 2011, is on the rise according to a number of different studies. But she also acknowledged that the representative had incorrectly described the data to me as having come from the FTC. "We apologize for any confusion her inadvertent cite error may have caused," Nealy said.

The Economics of Free Trials

The business model behind free trials is simple: Give people a taste of your service, keep your fingers crossed that they like it, and hope that they stay. Requiring a credit card at sign-up makes it easier for companies to convert tire kickers into paying customers. Companies that I spoke with claimed that the requirement was a convenience. GoToMyPC representatives, for instance, say that the requirement allows the company to continue service without interruption when the free trial ends. Internet Movie Database's reps justify it differently, saying that "a credit card allows us to verify a user's identity and avoid multiple sign-ups for free trial memberships."

Who are these companies kidding? The credit card requirement serves only the companies offering the free trial. Having to put down a credit card to participate in a free trial is like lending your friend money for a trip to Las Vegas: Sure, he'll pay you back, but when? It's a risk.

When a company requires a credit card as part of a free trial, 40 to 45 percent of those accounts become paying customers, says John Greathouse, a dot-com entrepreneur who was also one of the original online marketers for GoToMyPC. "Non–credit card trials generally convert in the low single-digit range—typically 2 to 4 percent," Greathouse says.

Another painfully clear truth: The easier companies make it for people to sign up, the more customers they get. Such companies may also suppose that the harder they make it for trial users to unsubscribe, the more customers they'll keep.

That's flawed logic, in my opinion. The more hassles a company gives me, the less likely I am to do business with them. And the companies that make it easiest to unsubscribe are ones that I would consider patronizing again. ●

MORE ONLINE **For information about the results we got from all 40 free trials we tried, visit go.pcworld.com/freetrials.**

Here's How

Build a Quiet and Energy-Efficient Gaming PC

Assembling a system that maximizes game performance while reducing power consumption and noise is challenging. Here are some suggestions.

BY LOYD CASE

ARE YOU A gamer with a big monthly electricity bill? Are you looking to build a PC that doesn't sound like a jet engine every time you start playing Diablo III? Then this guide is for you. Imagine a PC that can hit 60 frames per second running most games on today's 1080p displays. Now imagine that system idling at 70 watts. Even under the heaviest load, it consumes just 336 watts. And better yet, this system makes few compromises in overall performance.

A Brief Tour

Here's how I built a killer system that's fairly green.

I chose a Corsair Obsidian 550D midsize-tower chassis ($130). The front cover (not pictured here) conceals the optical drive, but its real purpose is to help baffle noise. The dense foam material lining the front cover also lines the two side panels.

Like most Corsair cases, the 550D offers plenty of room under the motherboard tray to route power and other cables. It's also an appealing choice because it fully supports internal USB 3.0 connections for the front-panel USB ports. The power and reset buttons remain exposed even when the cover is installed.

This PC has plenty of input/output options, including lots of USB 3.0 ports, eSATA support, two flavors

PHOTOGRAPHS: LOYD CASE

Key components help to reduce noise and power draw.

- **A** Radiator for CPU cooler
- **B** CPU and liquid-cooler pump
- **C** GTX 680 graphics card
- **D** Solid-state drive
- **E** 80 Plus Platinum power supply

of digital audio outputs, gigabit ethernet, and multichannel analog audio. It even has a PS/2 keyboard connector.

For the operating system, I chose the 64-bit Windows 7 Ultimate ($190), but Win 7 Professional would do just as well. These days I avoid the Home Premium edition due to its 16GB memory limit.

It's All About Power

The key step in achieving this system's energy efficiency involved selecting the right power supply. One important aspect of the decision was my wish to avoid a second GPU. Instead, I wanted a single, high-performance graphics card that could handle almost anything.

Freeing myself from the need for a second GPU let me pick a power supply with just two PCI Express graphics connectors: the Antec Earthwatts Platinum 650W ($120). It's 80 Plus Platinum certified, which means that it must maintain close to 90 percent efficiency throughout its range, even under load and idle extremes.

The upside is low maximum power consumption and high efficiency. The downside is a lack of modularity—the existing power connectors are permanently attached. If you need more power for a second GPU, a great alternative is Seasonic's Platinum 860W power supply, but that component costs $220.

Nvidia Cards: Energy Efficiency at Last

Maybe it's all the effort Nvidia has been expending lately on building low-power processors for mobile devices. Or maybe the company just got tired of losing to AMD in the low-wattage competition. Whatever the reason, the GeForce GTX 680, its latest high-end GPU, is a power-sipping prodigy. The $530 Asus-branded GTX 680 that I chose requires two six-pin power connectors, something unheard of in a flagship graphics card. Nvidia also endowed the GTX 680 with the ability to support four displays; I currently have one running three 30-inch panels on my desktop.

The GTX 680 is certainly faster than AMD's flagship Radeon HD 7970, but it's also smaller, quieter, and cooler. The 1536 GPU cores translate into superb performance in modern PC games.

CPU, Motherboard, and Memory

I wanted a platform that offered growth potential without sacrificing performance. That meant LGA 2011, which supports huge memory bandwidth and Intel's top CPUs. Since I didn't want to break the bank, I opted for the lowest-cost LGA 2011 CPU: the $310 Core i7-3820. It has 10MB of L3 cache, a quad-channel DDR3 memory controller, and Hyper-Threading support. It boasts a staggering 40 PCI Express lanes, making it suitable for multi-GPU setups. Offering a base clock of 3.6GHz and a maximum Turbo Boost speed of 3.8GHz, it's no slouch. »

For the motherboard, I selected the Gigabyte GA-X79-UD3 ($240), one of the more power-efficient boards based on Intel's X79 chipset.

Kingston supplied us with a pair of 8GB HyperX LoVo memory kits ($118 total). They can run at 1600MHz while drawing just 1.5V (instead of the usual 1.65V), but I kept them at the default 1333MHz.

I used Corsair's $65 H60 sealed liquid cooling system. Since a sealed liquid cooler has a lower profile than big air coolers, it improves airflow overall while maintaining an idle CPU temperature below 40 degrees Celsius.

A FAST, QUIET PC

BENCHMARK	Result
Synthetic benchmarks	
Cinebench 11.5 (CPU score)	7.15
Cinebench 11.5 (GPU score)	52 fps
Mainconcept 2.2	559 seconds (136 fps)
PCMark 7	4625
PCMark 7 storage	4781
3DMark 2011 (Performance)	9270
3DMark Vantage (Performance)	30,058
Gaming benchmarks	
Batman: Arkham City	62 fps
Dirt 3	105 fps
Far Cry 2	154 fps
Metro 2033 (4x AA)	26 fps
Metro 2033 (AA off)	33 fps
Shogun 2	35 fps
Stalker: Call of Pripyat	86.5 fps

CHART NOTES: fps = frames per second. We ran all games tests at a resolution of 1920 by 1200 pixels, with all detail levels maxed out and with 4x multisampling antialiasing enabled (except where noted). For information about interpreting PCMark and 3DMark scores, visit www.futuremark.com. For technical information about Cinebench 11.5, visit go.pcworld.com/cinebench. The Mainconcept 2.2 test transcoded a 4.3GB high-definition video file from 1080p MPEG-2 format to H.264 iPhone format (304MB final size).

Storage

The boot drive on this PC is a 250GB Intel 510 Series solid-state drive ($520). The secondary drive is a two-platter, WD1002 FAEX hard drive ($140), which offers enough space for user data folders.

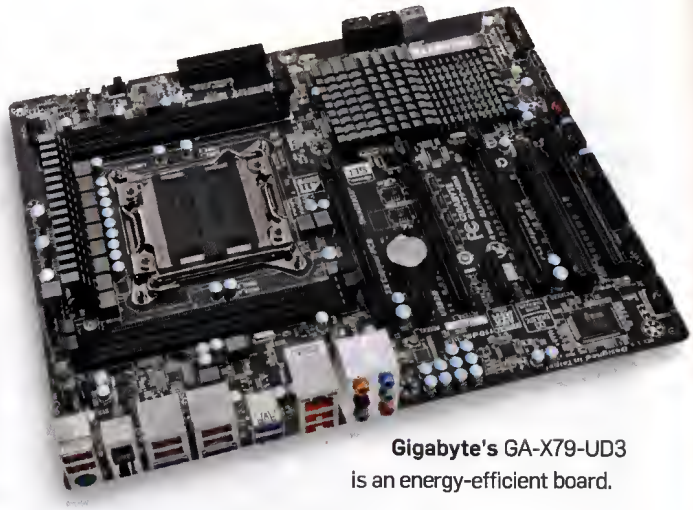
The optical drive I used in this ultraquiet and energy-efficient gaming PC is Asus's latest Blu-ray combo drive, the BC-12B1ST. At about $58, it's not much pricier than a standard DVD drive.

System Performance

In the chart to the left, you can see how this PC performed in tests. Although the machine is built to run games at high frame rates, it's also not a bad all-around performer, as it posted great results in our PCMark 7 and 3DMark testing regimen. (See page 92 to learn more about benchmarking with PCMark 7.)

Even a huge performance hog such as Metro 2033 reaches over 30 frames per second at a 1920 by 1200 screen resolution on this PC. Perhaps more representative is the 62 fps we saw in Batman: Arkham City at 1920 by 1200, with maximum detail levels and 4x multisampling antialiasing.

These performance numbers are quite good, coming within a few percentage points of a system with a Core i7-3960X CPU. Yet this PC idles at just 69W, significantly lower than the power usage of most gaming PCs.



Gigabyte's GA-X79-UD3 is an energy-efficient board.

Cost and Alternatives

In the end, we have a high-end gaming rig with lots of RAM, a superb graphics card, an SSD boot drive, and plenty of secondary storage. The total comes to $2421. If I had wanted a lower-cost system, I might have chosen a new Ivy Bridge CPU; the Core i7-3770K would likely cost a few dollars more, but a motherboard based on the Z77 chipset would cost less than an X79 motherboard.

If you're using Ivy Bridge, you can opt to buy just 8GB of RAM, halving the memory costs. I would keep the 1TB Western Digital hard drive, but replace the Intel 510 with a smaller, lower-cost SSD that could act as a very fast hard-drive cache using Intel's SmartResponse technology. Storage costs would probably be closer to $270 than to $660. The total cost of the hypothetical Ivy Bridge PC would drop below $2000.

One further possibility: Graphics cards based on Nvidia's GTX 680 GPU are in short supply, but you can easily find an AMD Radeon HD 7970 for about $480. It's nearly as fast and just a tad noisier, and it consumes only a bit more power.

Antec's Earthwatts Platinum power supply.

Edit Documents on a Tablet in Quickoffice

Instead of having to boot up your laptop, you can use your iPad or Android tablet to view and edit office documents.

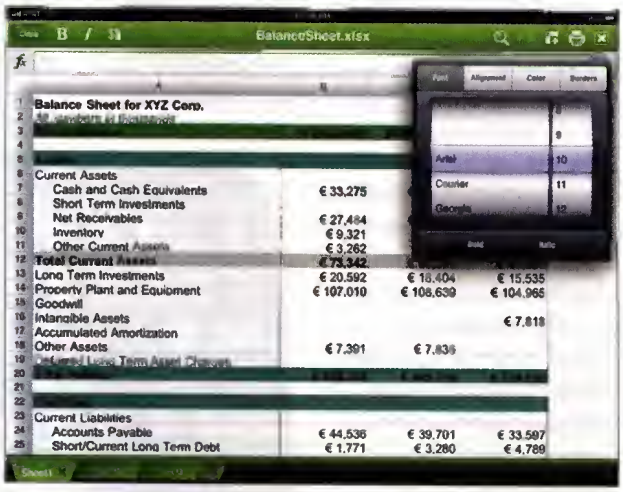
IF YOU'RE CONSIDERING carrying a tablet instead of your laptop, you're most likely concerned about sacrificing the functionality of a PC—especially the office software that lets you view and edit documents. Fortunately, you can find excellent apps that duplicate the features of editing software such as Microsoft Office.

Although tablet users can try any of the editing apps created for phones (see page 89 in our September issue), one application is designed with tablets in mind: Quickoffice Pro HD ($20, www.quickoffice.com). It's filled with tools for working with documents, spreadsheets, and presentations, and it lets you sync documents automatically with cloud hosting services such as Dropbox.

Setting Up Quickoffice

To get started with syncing in Quickoffice, simply tap the '+' icon in the bottom-left corner of the iPad screen or the '+cloud' icon in the top-right corner of the Android interface, and enter your credentials for the service of your choice. You log in only once. Afterward, you can browse stored files, or create a new item by using the '+document' icon in the toolbar. Though the app lets you choose between Office 97–2003 and Office 2007–2010 formats, you should stick to the 2007–2010 .docx, .xlsx, and .pptx formats unless you have a good reason not to.

Once you're ready to share your documents, this same interface allows you to send files via email or to upload them to any of several social hosts. This is a great way to work on documents with colleagues who use different platforms (PC/Mac/Linux): You can share documents on a service such as Evernote, collect the edits, and then republish the documents in an Office-friendly format.



Quickoffice's spreadsheet editor has various formatting options.

In Quickoffice you can upload files to several social hosts.

Quickoffice's text editor is straightforward, with Bold/Italic/Underline, Undo/Redo, Search, Print (using an app or service such as Cloud Print for Android), and Formatting options available in the toolbar. You can input, cut, and paste text by tapping or dragging anywhere inside the main interface.

The spreadsheet editor is much the same, with an extra option for inserting new rows. You can resize or copy cells by tapping or dragging. Clicking within the function bar brings up an elegant function-search wizard that allows you to input Excel-style functions, or to choose any of several common functions from a menu.

Similarly the presentation editor has few surprises; the usual text formatting and undo options are right where they always are. In addition, another menu (with a butterfly icon) allows you to insert text, shapes, or photos, and the play icon lets you see your presentation in action. You can drag images around a slide, and you can long-press to cut and paste.

—Alex Garnett

Wirelessly Mirror Your iPad Display to an HDTV

THANKS TO APPLE'S AirPlay technology in the new Apple TV ($100), getting your iPad to work with your HDTV for movie nights or vacation slideshows is easy.

You need an iPad 2 or a third-generation iPad running iOS 5 or later, and a second- or third-generation Apple TV running software version 5.0 or later.

Turn your iPad and Apple TV on, and connect them to the same Wi-Fi network. Double-press the iPad's Home button to open the Recently Used Apps bar. Swipe from left to right until you see an icon showing a rectangle with a triangle in front of it (it's a stylized HDTV). Tap that icon to produce a list of available AirPlay devices on your network; select the Apple TV, and toggle the Mirroring switch to *On*. At this point your iPad's display should appear on the HDTV.

If you don't see the AirPlay icon on your iPad, confirm that both Apple devices are connected to the right Wi-Fi network, and update them to the latest system software. Verify that AirPlay is enabled on the Apple TV by navigating to *Settings* ▸ *AirPlay*. If that fails, disable your router's firewall to see whether it is blocking needed ports. Apple claims that AirPlay uses ports 80 (TCP), 443 (TCP), 554 (TCP/UDP), 3689 (TCP), and 5353 (UDP); but some users have said that they couldn't get AirPlay to work without also opening 62078 (TCP/UDP), 7000 (TCP/UDP), and 7100 (TCP/UDP). If AirPlay works fine when your firewall is disabled, reenable the firewall and then follow your router's instructions for opening those ports.

—Potrick Miller

Arranging iPad-display mirroring is as easy as flipping a switch.

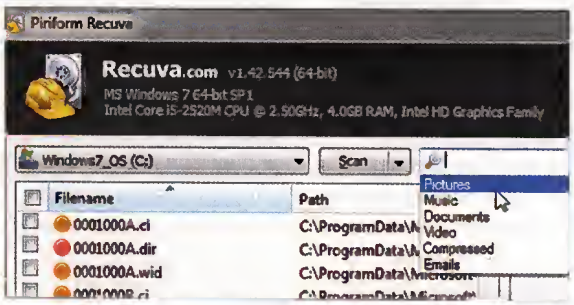
Recover Missing Files

IF YOU LOSE track of a file or folder, don't panic: You have a pretty good chance of getting it back. (However, be sure to avoid using the computer for anything else until you have either recovered the file or given up.)

To find out whether you moved the file accidentally, use Windows' search function to look for the filename, or for a distinctive word or phrase in the file. In Windows 7 or Vista, use the Search field in the upper-right corner of any Windows Explorer window. In Windows XP, select *Start* ▸ *Search*. If that doesn't pan out, look in the Recycle Bin.

No luck? Check your backup—assuming, of course, that you back up your files. Lacking a good backup, you'll have to try a portable file-recovery program (one that doesn't have to be installed). I recommend Recuva Portable (go.pcworld.com/recuvaportable), which is simple and effective.

—Lincoln Spector



Use Piriform's Recuva Portable to retrieve a mislaid file.

Bookmark Any Web Page With a Quick Shortcut

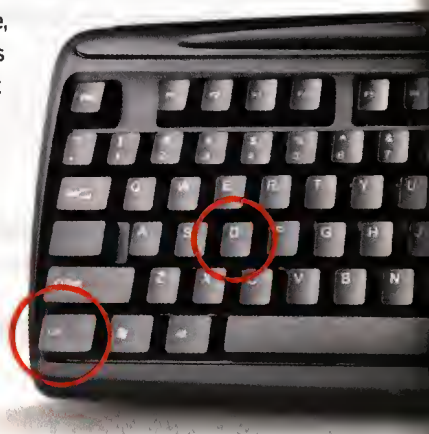
HOW DO YOU bookmark a website? Most users venture into the Bookmarks menu and click 'Add to Favorites' (or something similar). That can add up to a lot of clicking.

Here's a faster, smarter way: In Chrome, Firefox, Internet Explorer, Opera, or Safari, press **<Ctrl>-D** to bookmark the current page. (Why not <Ctrl>-B, for *bookmark*? That shortcut is almost universally reserved for the bold command.)

In some browsers, you can do a bit more. For example, in Chrome, pressing **<Ctrl>-<Shift>-D** lets you bookmark a page and edit the details. In Firefox, that same combination bookmarks all currently open tabs.

Even if you don't get fancy with it, <Ctrl>-D is a shortcut that's definitely worth learning, regardless of which browser you use.

—Rick Broida



PHOTOGRAPH ROBERT CARDIN

Configure Multiple Monitors in Windows 8

FEW UPGRADES CAN improve productivity as much as multiple displays can. In Windows 8, Microsoft is introducing multimonitor-related enhancements, some of which will help you use your screens more efficiently.

Whether you have integrated graphics hardware (such as the Intel HD 4000 series) or a discrete graphics card, setting up multiple monitors is easy in the new OS.

Intel HD 4000: With integrated graphics, simply connect a second monitor; the OS should recognize it. Bring up the desktop, right-click the background, and choose *Personalize* from the menu. (Alternatively, open the Start menu and enter **Display Settings** in the search field.) Click the *Display* link, followed by *Change Display Settings*. Click and drag the virtual monitors to mimic your physical setup. Click *OK*.

Nvidia graphics cards: The Windows 8 Release Preview seems not to include drivers for midrange to high-end GeForce cards; if you're on the Preview, download and install the drivers for your card. Next, right-click the desktop and choose *Nvidia Control Panel*. Click the *Set up multiple displays* link, and follow the procedure outlined above to indicate the monitors' positioning.

AMD graphics cards: In our tests, the Release Preview detected and installed drivers for Radeon HD 5000, 6000, and 7000 series cards. Even so, we recommend downloading and installing the latest drivers from the AMD site. The subsequent setup process for a basic multimonitor configuration is identical to the one described earlier.

In addition, Radeon HD 5000 series (and newer) cards support AMD's Eyefinity feature, which you can configure to treat multiple monitors as a single, large surface. To set up Eyefinity after installing the latest AMD drivers, right-click the desktop and choose *Catalyst Control Center*. Under 'Desktop and Displays', click the *AMD Eyefinity Multi-Display setup* link. On the next screen, choose the *Create Eyefinity Display Group* option, and then follow the prompts.

—Marco Chioppetta

ANSWER LINE

How do I password-protect a flash drive? —Enddylopez

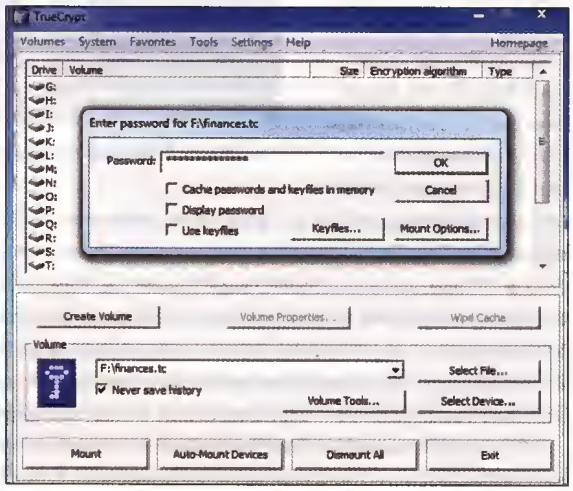
LINCOLN SPECTOR

IF A FLASH drive contains sensitive data, you should password-protect at least those files, if not the whole drive. You can use encryption software, or you can buy an encrypted flash drive.

Recently my colleague Jon L. Jacobi named the Imation Defender F200 as the top encrypted flash drive among five contenders (go.pcworld.com/encryptedflash). He prefers an encrypted drive to encryption software: "[A] chip is harder to hack, and to reach it means actually tampering with the drive, which is easy to detect."

Not everyone agrees. Security guru Bruce Schneier thinks it's best to separate the encryption algorithm from the hardware. "I use random flash drives with PGP Disk for security," Schneier says. The current version of PGP Disk costs money and is strictly for business use, so I recommend the free, open-source TrueCrypt (go.pcworld.com/truecrypt).

After you install TrueCrypt on your PC, you can drag the program folder (which is less than 8MB) to your flash drive. You can then run the tool on any Windows computer with a USB port. One caveat: Launching TrueCrypt on a PC where you have not installed it brings up a User Account Control message. If you're not logged on as an administrator, you will need an administrator password to run the program.



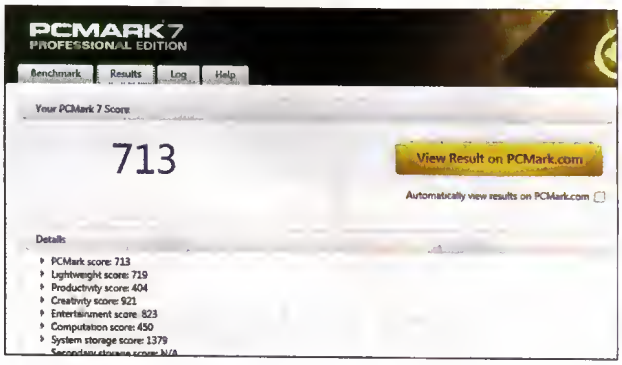
TrueCrypt lets you guard your data with a password.

Perform Total System Benchmarking for Free

RUNNING BENCHMARKS on a PC helps you assess its performance, identify bottlenecks, and choose upgrades. Some benchmarks evaluate the effectiveness of one component, while others measure total system performance.

As a total system benchmark, the basic Windows Experience Index built into Windows 7 and Vista is a poor choice, owing to the rudimentary nature of the tests and the lack of granularity in the results. Instead, we recommend using a suite such as Futuremark's PCMark 7. The benchmarking tool is available in a free basic edition, and you can run it with a click. (We used it to test our quiet, power-efficient gaming PC; see page 86.)

PCMark 7 (go.pcworld.com/pcmark7) taxes the CPU, GPU, memory, and hard disk; it then generates scores, with higher scores indicating better performance. It emphasizes disk and storage performance, but that's okay: Upgrading from a hard drive to a solid-state drive tends to be one of the best moves you can make to improve PC responsiveness, and PCMark 7's results reflect that.



Futuremark's PCMark 7 tests the CPU, GPU, RAM, and storage.

As a baseline for comparison, an Intel Core i7-2700K system with 8GB of RAM, a discrete Nvidia GeForce GTX 280 graphics card, and a 7200-rpm hard drive should earn a PCMark score of roughly 3800. If you upgrade that system by inserting an SSD, the PC's score should jump to about 5100.

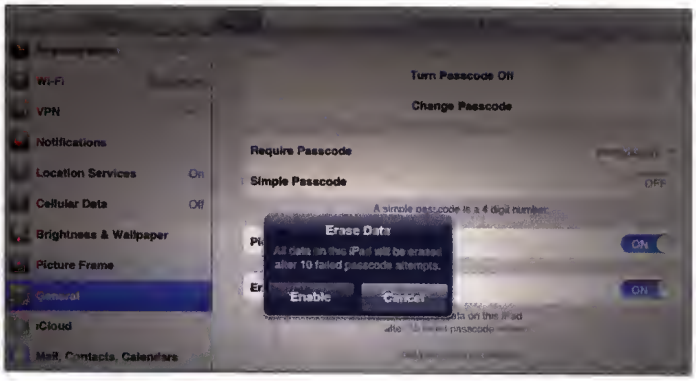
—Marco Chiappetta

EASY HACK: ENCRYPT YOUR APPLE IPAD

IF YOU WANT to bring your own iPad to the office for work purposes, you should think about how to secure the device against tampering, on the off chance that you'll lose the tablet or allow it to slip into the wrong hands.

Encryption can keep your data secure. Apple says that its devices have hardware encryption out of the box—protection that the user can't disable. This is a good thing, since it makes the company's "Fast Erase" functionality possible: If you lose your iPad or iPhone, you can remotely wipe the device in seconds, if the feature is enabled. Unfortunately, the hardware encryption has a weakness: If your device is jailbroken, all bets are off. Jailbreaking an Apple device bypasses the security code, so if someone steals your iPad, your data is only a jailbreak away.

iOS 4.0 added the Data Protection feature, which offers true encryption. But apps must enable Data Protection in order to take advantage of it—and most apps, to date, don't make use of it. Note, too, that iCloud Storage doesn't encrypt your data, so using that service will open your cached data to prying eyes if someone compromises your iPad via a jailbreak.



The iPad's Passcode feature can wipe your data if a thief tries to access it.

That said, if you want to encrypt your iPad without jailbreaking it, you will have to rely on Apple's encryption features. Using them is as easy as activating the Passcode function in the General settings; the default Simple Passcode provides a four-number combination to unlock the device, and turns on the basic hardware encryption. Remote Wipe, also listed under Passcode Lock, will turn on Data Protection, and will erase all data on your device after ten invalid passcode-entry attempts.

Not sure whether these features meet your employer's requirements? See Apple's iPad-security white paper (go.pcworld.com/iOSsecurity); for many businesses, the iPad's amount of protection might be sufficient, even with the caveats described above.

—Jason Kennedy

Install Ubuntu Server

NEED TO PUT Ubuntu Server on your business's PCs? I'll tell you how, using a laptop as an example.

Browse to go.pcworld.com/ubuntuserver, download the file, and create a bootable CD or USB stick with it. Insert the bootable media into the laptop, and configure the PC to boot from it.

Once the laptop boots, a menu with the Ubuntu logo will appear. Select *Install Ubuntu on a Hard Disk*.

Ubuntu should correctly identify your network adapters. The wireless one is usually called 'wlan0'. Select it, and type the name of the network, as well as its access password. (Both are case-sensitive.) Pick a host name for your computer.

You will have to make room for Ubuntu, which probably entails resizing the laptop's hard-drive partitions. Choose the first option, *Guided - resize*. After this lengthy procedure (I had to wait about 20 minutes), configure your full name, username, and password.

Let Ubuntu proceed with updates. Make sure to install the GRUB boot loader, which will let you boot into Ubuntu.

You're finished. Simply remove the USB key or CD, and restart the computer.

—Erez Zukerman

HASSLE-FREE PC

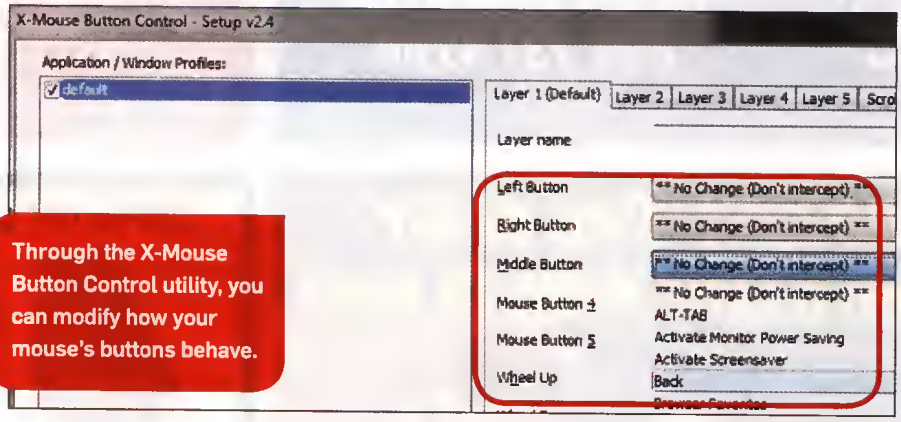
Do More With the Middle Mouse Button

RICK BROIDA

Enhance your mouse's functionality with a free utility. Plus: Hide your '@facebook.com' email address in favor of the one you want to use.

MOST COMPUTER USERS do most of their clicking on the left side of the mouse. Many make good use of the right button too. But only a handful take advantage of the middle button.

You might be thinking, "My mouse doesn't have a middle button, just a scrollwheel." But that wheel doubles as a button; try pressing it. (Admittedly, on a few older models the wheel really is just a wheel.) You can click and hold that button, and then move the mouse back and forth to scroll in a Web browser. If you want more versatility, though, check out the free X-Mouse Button Control (go.pcworld.com/xmouse), a utility that modifies mouse button behavior.



Through the X-Mouse Button Control utility, you can modify how your mouse's buttons behave.

For example, you can program your mouse's middle button to go back a page in the browser, close the current window, or cut or copy selected text. My favorite use for the middle button: double-click. Instead of manually double-clicking a desktop icon, I just middle-click it.

This is a handy utility, almost on a par with my all-time favorite, WizMouse (go.pcworld.com/wizmouse). If your middle mouse button is sitting idle, I recommend giving X-Mouse a try.

Fix Facebook's Annoying Email Switcheroo

You know the email address that appears on your Facebook profile—the one you make visible to friends? You may find that Facebook has replaced that address with the @facebook.com address that the social network assigned to you when it rolled out its mail service. My reaction was thanks, but no thanks. If you feel the same, here's how to undo the unwanted change.

1. Go to Facebook, and head to your profile/Timeline (by clicking your name).

2. Under your photo, click *About*. Scroll down to the Contact Info box. If this change has affected your account, you'll see an @facebook.com email address. Click *Edit*.

3. Next to your primary address, you'll see a circle with a slash through it. Mouse over it; the 'Hidden from Timeline' pop-up should appear. Click that, and choose *Shown on Timeline*.

4. If you want, you can mouse over that same area next to your Facebook address, click it, and choose *Hidden from Timeline*. That's the second half of fully undoing what Facebook did, though there's no harm in leaving your Facebook address visible. Click the *Save* button. ●

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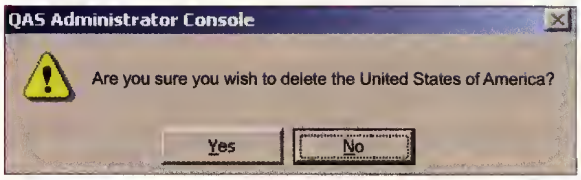
The Back Page

FROM OUR READERS

Software Superweapon



ROBERT CRITCHET, an IT manager in Fremont, Ohio, was cleaning out some unused data sets while updating his company's address checking software when he received the alarming invitation above. Let's hope that no enemy combatants get hold of this piece of software—though at least the default response is 'No'.

What If It's Not Okay?

YAHOO MAIL DOESN'T stint on the small talk in building a relationship, as Emily Sather of Avon, Minnesota, discovered while checking her account.

Security in Numbers

THE CLOUD-BASED ANTIVIRUS software Immunet relies on "community awareness" to protect you from attack. But Patrick Albert Salaver of Manila says Immunet's users must be "living in an Internet utopia," given the absence of threats (and members).

Have an idea for The Back Page? Send your suggestions to TheBackPage@pcworld.com.

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→ **Harris survey: Smartphone owners back Obama over Romney. Guess we know what Siri says when you ask it, "Who should I vote for?"**

→ **Facebook user satisfaction plummets, while Google+ shines, says study. Of course, it's hard to be dissatisfied with something you don't use.**

→ **FDA approves edible digital pills that track your health. A medical breakthrough—a bag of chips that's good for you!**

→ **Google Maps adds Street View images from Antarctica. It's too bad the continent has only seven streets.** ●

—Steve Fox and Steven Gray

ILLUSTRATION: GARY NEILL

WHY TODAY'S SMARTEST SYSTEMS HAVE BUILT-IN EXPERTISE.

The good news is IT solutions are now more sophisticated. The bad news is they're also more complicated. And all this complexity is taking its toll.

In fact, the typical IT department now spends up to 161 days just to specify, design and procure hardware for a new IT project (even longer for software).[1]

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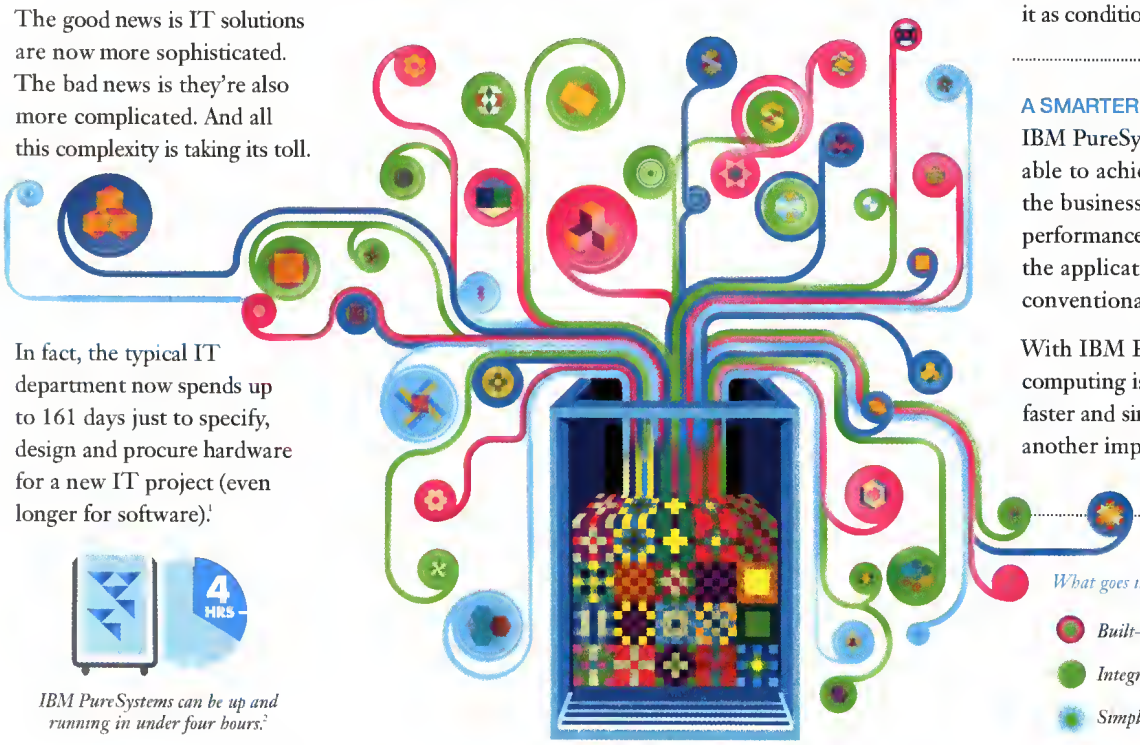

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- *Integration by design*
- *Simplified experience*

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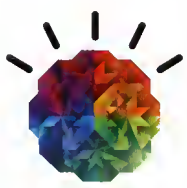

BEYOND CONVERGENCE.

Unlike today's "converged" IT solutions, IBM PureSystems are more than just prepackaged bundles of hardware and software; these systems are integrated by design, using built-in expertise to balance and coordinate IT resources to create a radically simplified experience for the end user.

Take the example of a database: IBM's extensive research on topics like transaction processing, honed through thousands of engagements with clients and partners, has been turned into a pattern of expertise. An IBM PureSystem can follow this pattern to automatically set up a database infrastructure in minutes. The system then monitors how the database is being used, tuning it as conditions change.

A SMARTER APPROACH TO I.T.

IBM PureSystems have been able to achieve up to twice the business application performance and up to twice the application density as conventional approaches.[3]

With IBM PureSystems, computing is not just getting faster and simpler. It's taking another important step toward making our companies, cities and planet smarter.

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LET'S BUILD A SMARTER PLANET.

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1 Based on a 2011 commissioned study conducted by Forrester Consulting on behalf of IBM. 2. Based upon testing of the IBM PureApplication System W1500-96 with time measured from powering on the system to when it is ready to support application deployments and based upon testing of the IBM PureFlex System Express & Standard models containing one chassis and one compute node with the time measured from powering on the system to when it is ready to support a virtual image deployment. 3 Up to 2X application density based upon simulations of virtualized applications on an IBM Flex System x240 Compute Node as compared to a previous generation IBM system. The IBM Flex System x240 Compute Node is available in IBM PureFlex System and IBM PureApplication System. Up to 2X performance of business applications based upon testing of IBM Storwize v7000 "Easy Tier" on previous generation IBM system IBM Storwize v7000 is included in IBM PureFlex System and IBM PureApplication System. IBM, the IBM logo, ibm.com, PureSystems, Smarter Planet and the planet icon are trademarks of International Business Machines Corp, registered in many jurisdictions worldwide A current list of IBM trademarks is available on the Web at www.ibm.com/legal/copytrade.shtml. © International Business Machines Corporation 2012.

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Pioneer's AppRadio™ 2 now supports Android*. Enjoy music, compatible apps and information from your smartphone directly on the display of the Pioneer in-dash receiver.

For a list of Android compatible devices and to learn more, visit www.pioneerelectronics.com/android

*Compatible with certain Android devices. Android connectivity requires the CD-AH200C Android Connectivity Kit, which is sold separately. Pioneer's AppRadio app provides access to Maps, Calendars, Contacts, Photos and installed 3rd party compatible apps. Third party apps or Pioneer's "AppRadio" app must be downloaded from the iTunes® App Store to an iPhone® 4, 4S or 4th generation iPod touch® or from Google Play to certain Android devices to enjoy compatible apps. NOTE: Do not use your Pioneer system if doing so will divert your attention in any way from the safe operation of your vehicle. Always observe safe driving rules. In some states certain operations of devices while driving may be illegal. Where such regulations apply, they must be obeyed. PIONEER and APPRADIO are trademarks of Pioneer Corporation. ANDROID is a trademark of Google Inc. iTunes, iPhone and iPod touch are registered trademarks of Apple Inc. ©2012 Pioneer Electronics (USA) Inc.